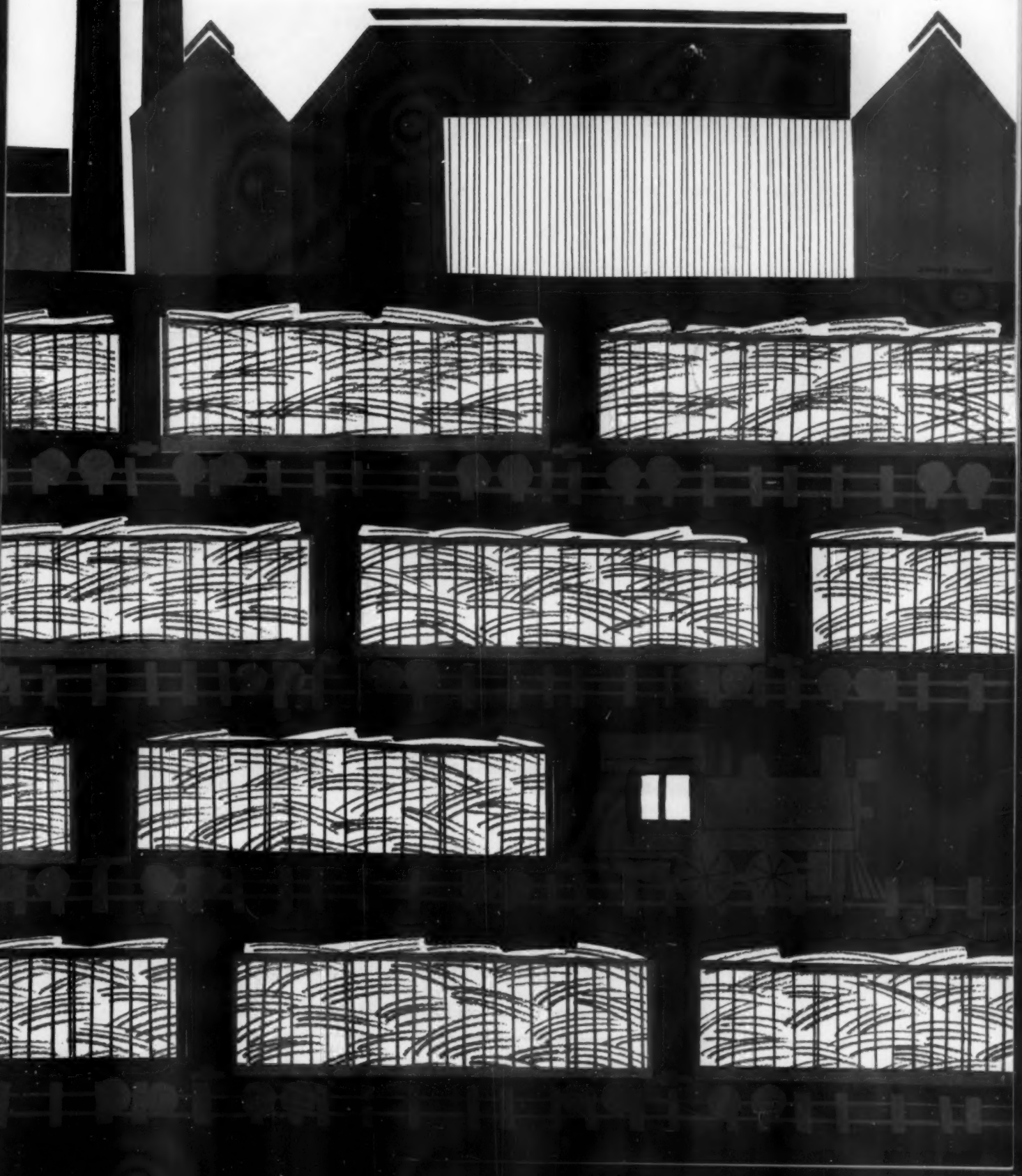
SUGAR Y AZUCAR

NOVEMBER 1960



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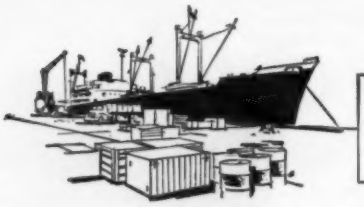

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In operation, juice enters the feed box and is fed by gravity tangentially onto the upper surface of the screen. Flowing down the concave surface at right angles to the openings between the wedge bars, the juice passes through these apertures and is collected in the screen box. Fibers pass down the screen surface and are dewatered prior to discharge.

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A DSM Screen installation showing simplicity of design and overall compactness.

Closeup showing detail of wedge bar design.

ADVANTAGES OF THE DORR-OLIVER DSM SCREEN

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Sugar y Azucar for November, 1960, Volume 55, No. 11. Published monthly by Russell Palmer Trust, Mona Palmer, Publisher. Publication Office, 109 Market Pl., Baltimore, Md. Editorial and executive office, 604 Fifth Avenue, New York 20, N. Y. Accepted as controlled circulation publication at Baltimore, Md.

SUGAR y AZUCAR

Volume 55 No. 11 November 1960

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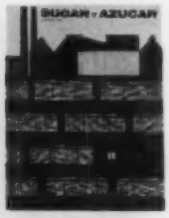
COVER *Transporting 33 million tons of cane to mills throughout the world is an important phase of the huge task of supplying the world's population with the fantastic total of 110 billion pounds of food in the form of sugar each year. One type of cane transportation is suggested in the design of this month's front cover by Jack Brown.*



PORTADA *El transporte de 33 millones de toneladas de caña de azucar a las fábricas de todo el mundo es una de las fases mas importantes en la colosal tarea de suministrar todos los años 110 billones de libras de alimento, en la forma de azucar, a los pueblos del orbe. El artístico dibujo de Jack Brown, en la portada de este mes, esta inspirado en uno de los tipos de transporte de caña.*

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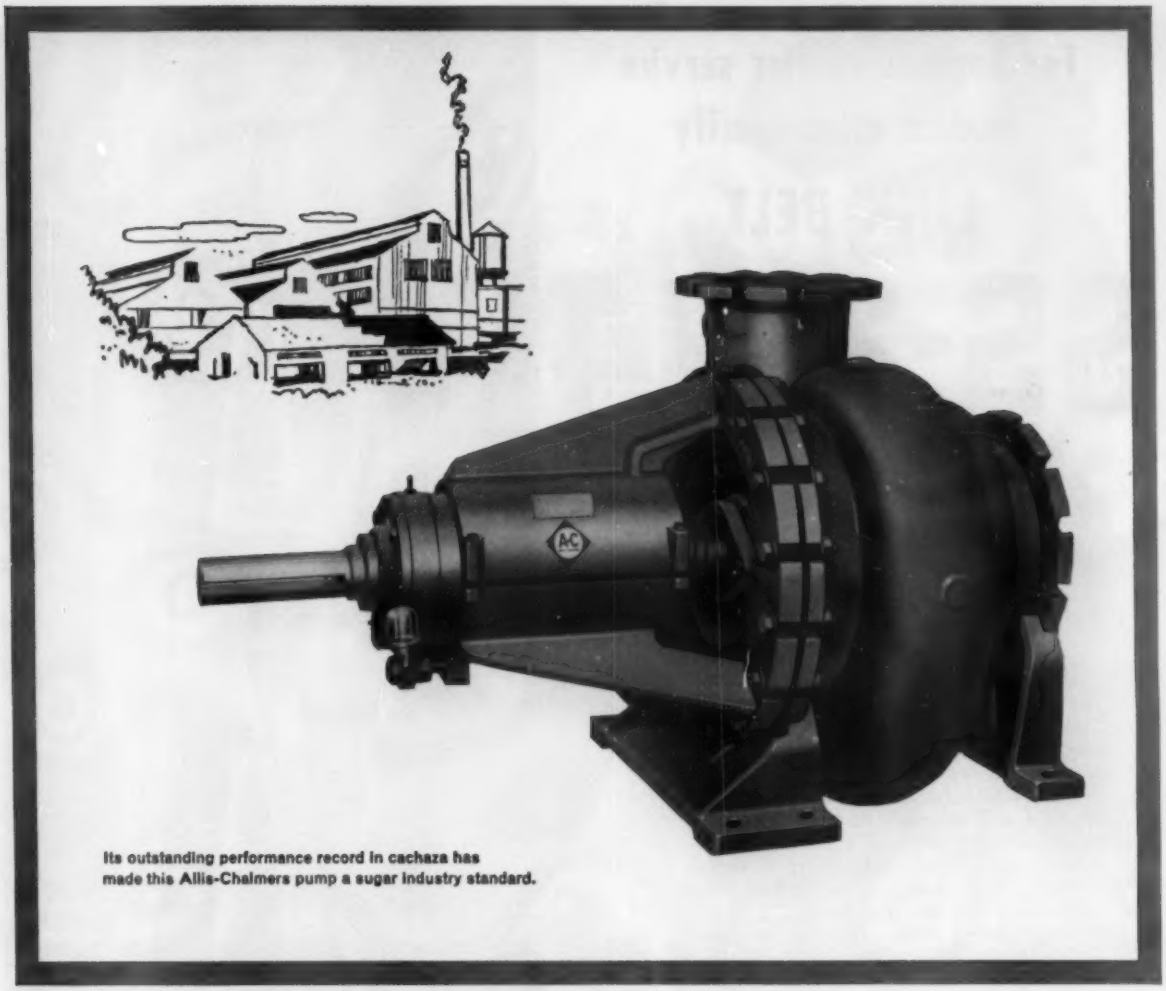

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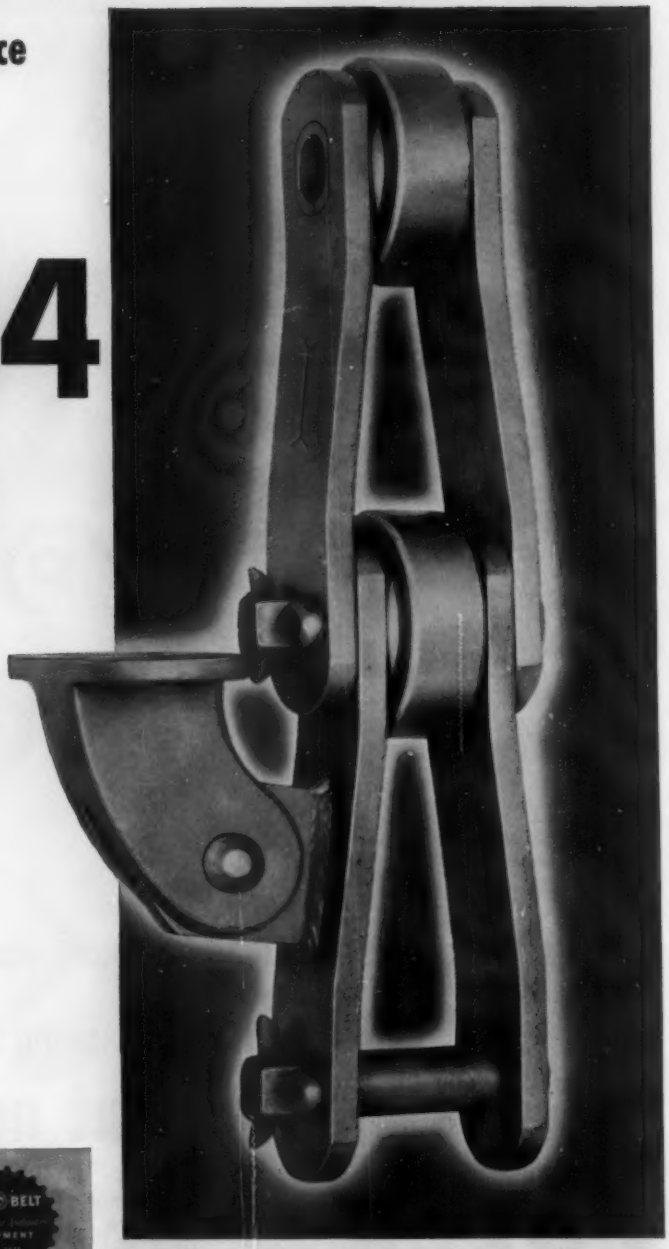

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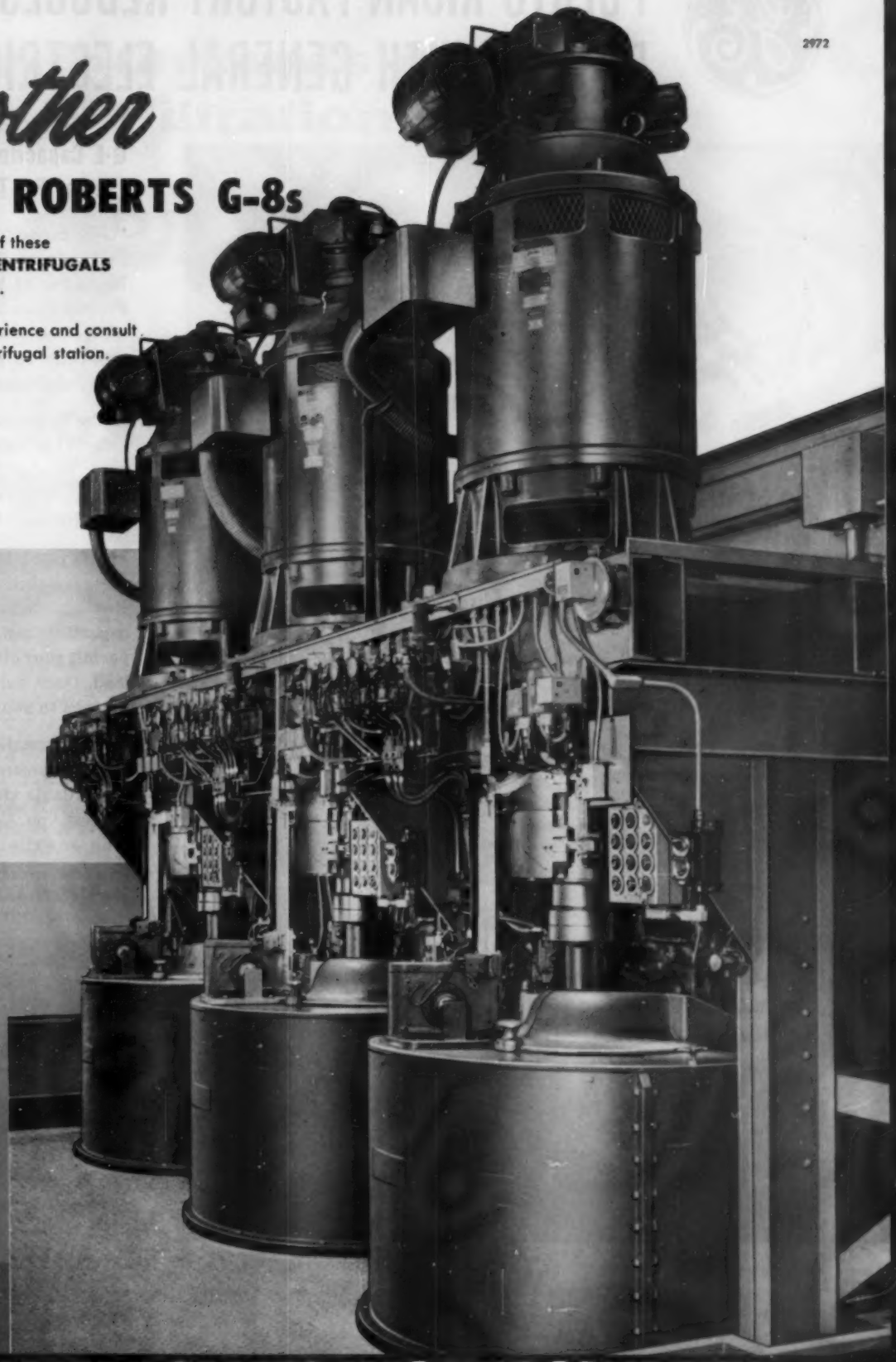

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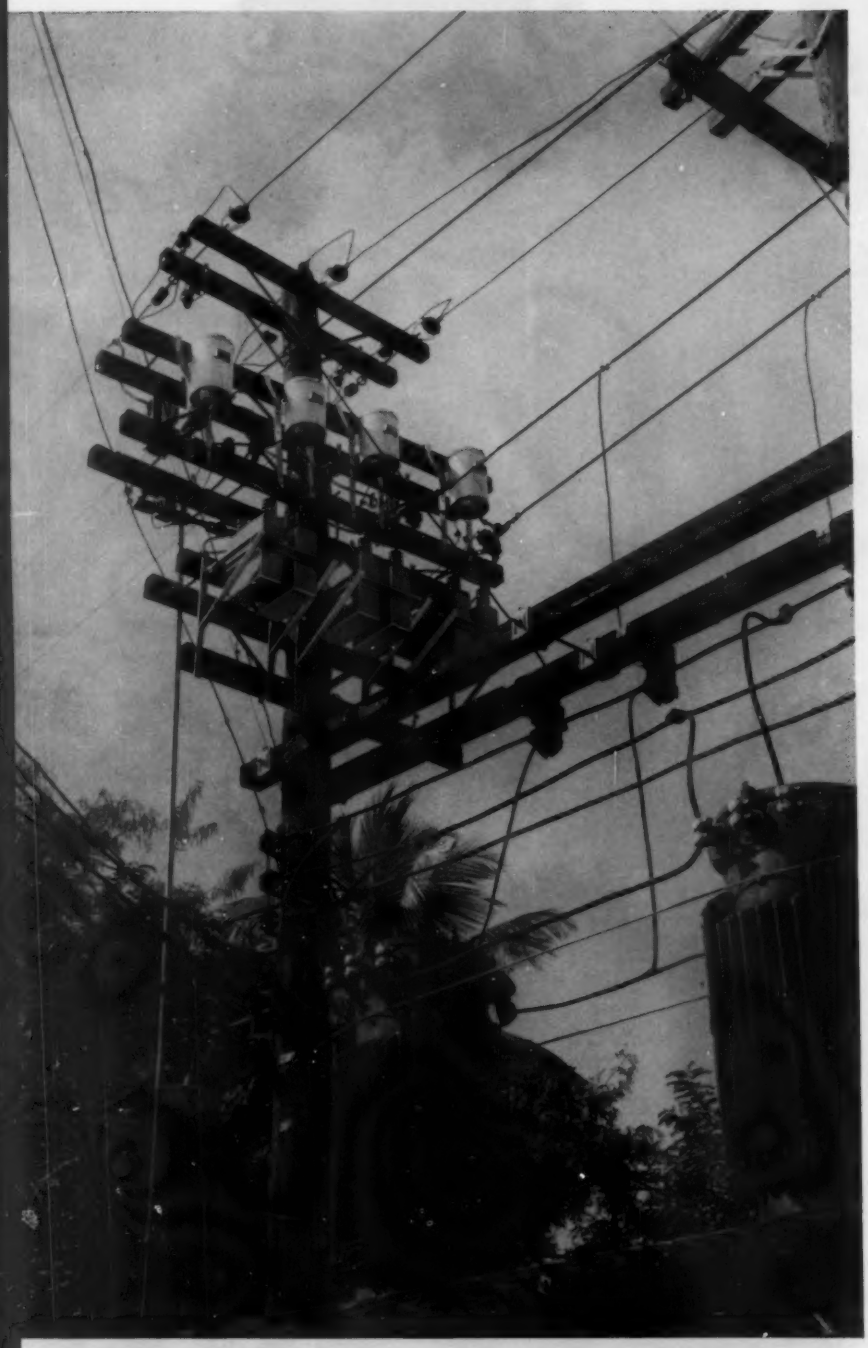

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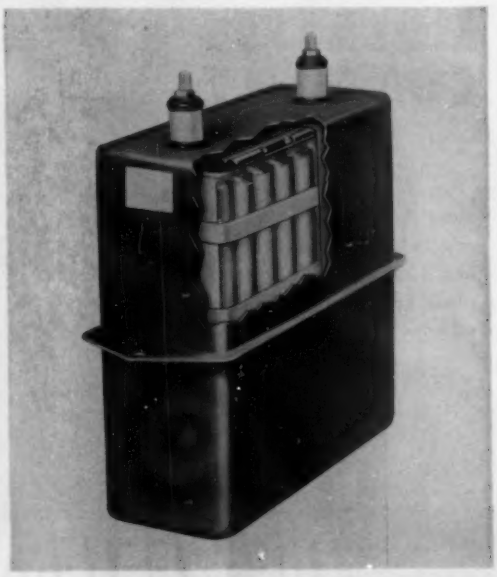

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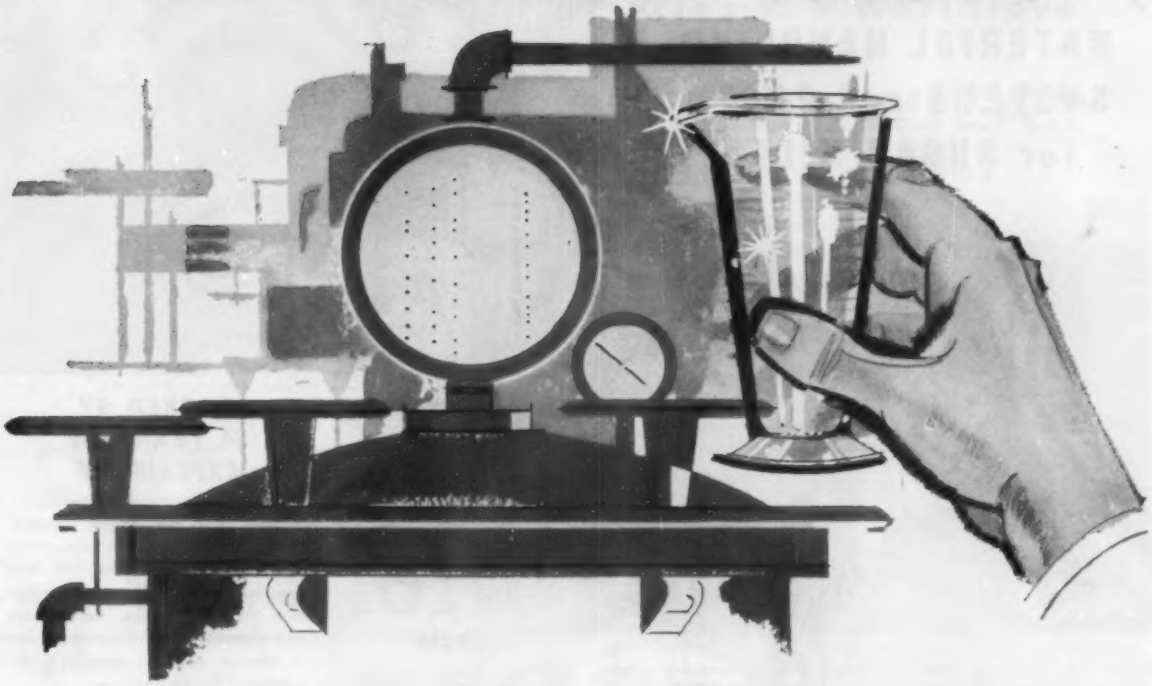

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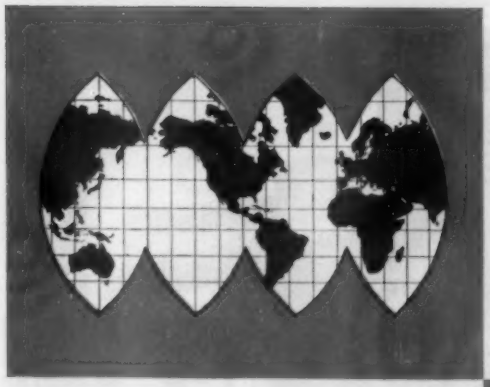

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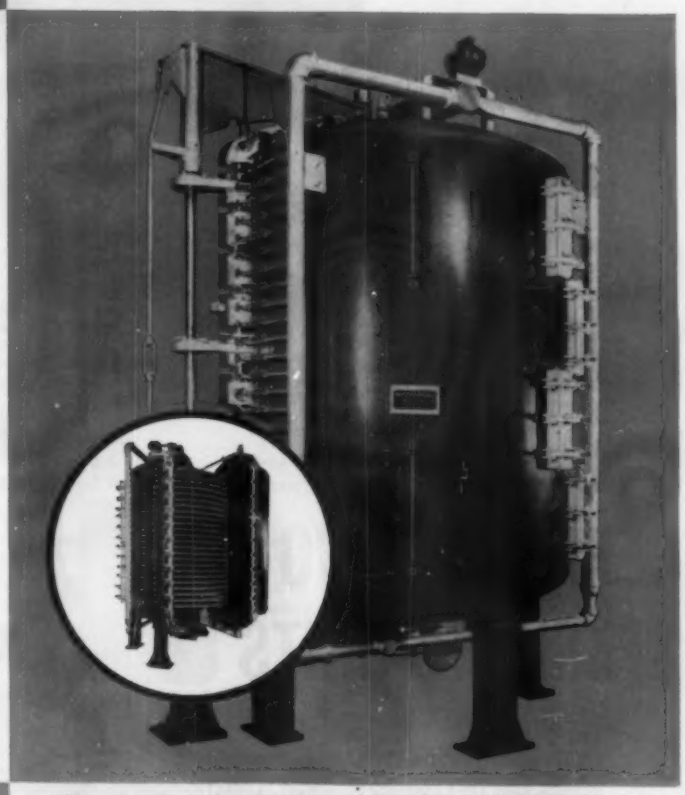

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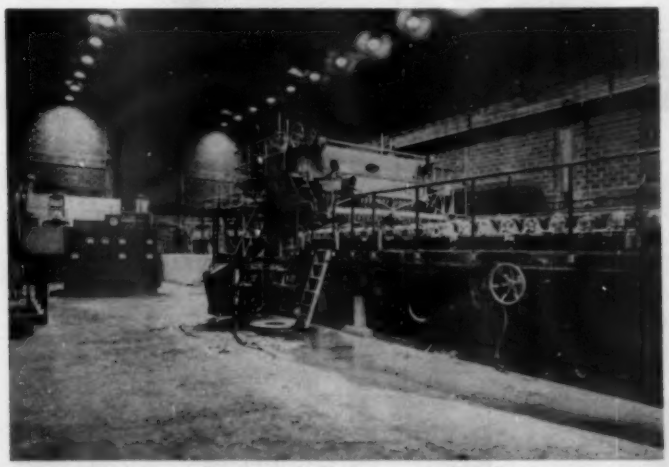

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EUROPEAN

News & Notes

By our London Correspondent

REPORTS from the main sugar beet areas in the U. K. suggest every hope of a record harvest for British Sugar Corpn. factories to handle and these are expected to open earlier in consequence. Prospects are rated high for a refined sugar output at least equal to last year's record tonnage; then BSC reported a crop of 5,509,769 (long) tons of sugar beet of high sugar content, resulting in a record production of 447,049 tons of refined and 312,924 tons of raw sugar, equal to a total white sugar output of 773,292 tons.

Incidentally, the three-man shareholders' committee formed at the corporation's annual meeting last July has now completed the memo on the shareholders' views it was charged to prepare. It is now ready to seek a Meeting with the Minister of Food and to urge the government to remove the 7% dividend limitation fixed by the Sugar Act of 1956. (SUGAR Y AZUCAR, Sept. 1960, pg 6), This limit has now been reached and it is argued that financial results justify a higher payment.

FROM Ireland comes the report of the Irish Sugar Corpn. chairman—John E. MacEllin—with good news of the 1959/60 sugar beet campaign and of the 1960/61 crop. The former is summed up clearly by the following figures *(1958/59 in italics for comparison):* acreage 68,454 *(83,593)*; beet delivered 927,349 *(784,003)* tons; average roots per acre 13.55 *(9.38)* tons; average sugar content 16.23% *(15.46%)*; white sugar per acre, 1.880 *(1.219)* tons; and total white sugar production, 128,694 *(101,900)* tons The 1960/61 season, according to the chairman, may well be an "outstanding" one from all the indications up to mid-year, but much depended on a return to the earlier good conditions after the low temperatures and excessive rains of July.

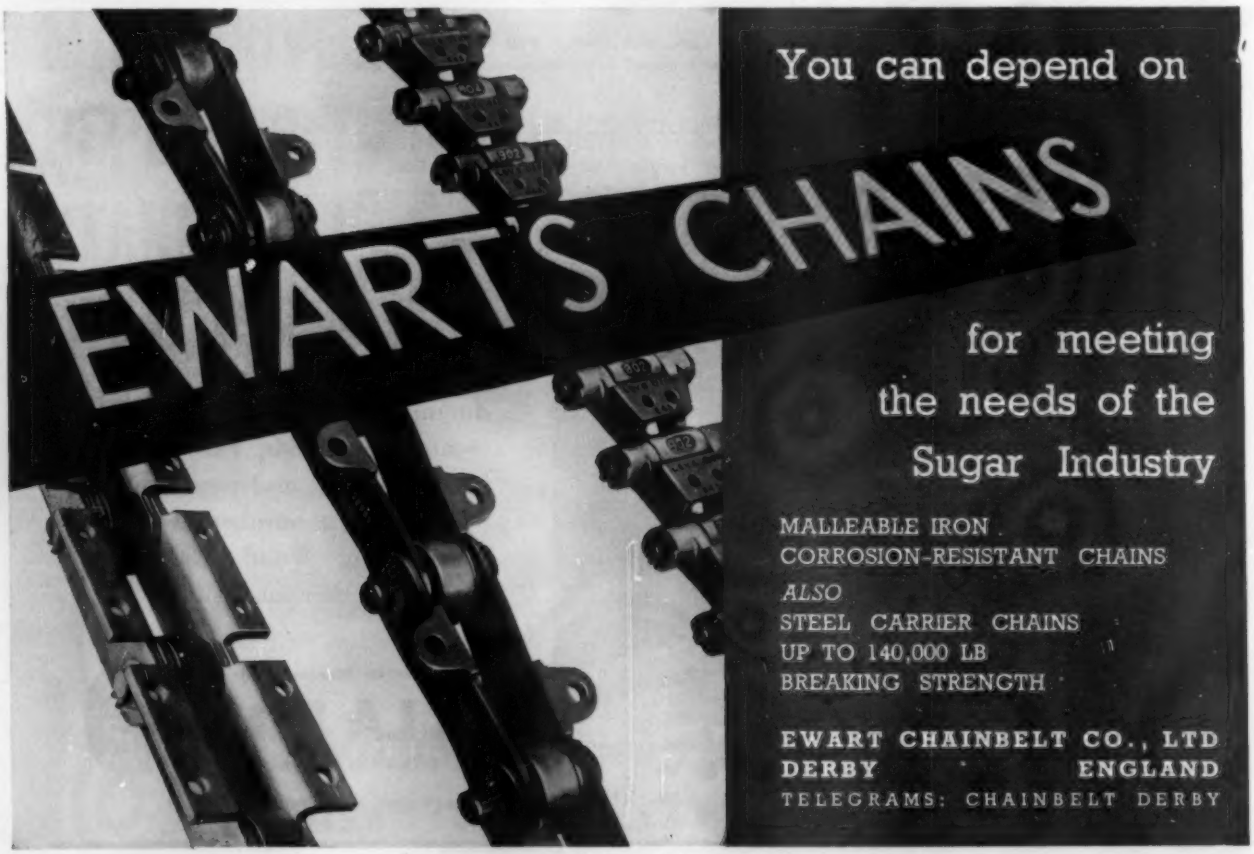
For the year ended April 30, 1960, the corporation made a trading profit of £396,318 after all charges and paid 5% on its 500,014 ordinary £1 shares. Balance of undistributed profit carried forward was raised to £477,200 from £414,575.

JAMAICA Sugar Estates Ltd., Glasgow, Scotland, has told its shareholders that as a result of a very severe freak cloudburst mid-January, just when sugar crop operations were about to begin, a flood of unprecedented depth over the canefields and railways delayed start of the crop several weeks and it was not finished until August 8. Further, only 12,967 tons were produced, against 18,756 tons last year.

So much silt came in with the cane that despite improvised cleansing measures factory processes were slowed down and boiler furnaces frequently choked. Nor did the weather improve.

There were rains almost weekly after mid-May which not only halted operations but reduced cane quality. By the end of August it was decided it was uneconomic to continue.

Fortunately, says the company, the cane left uncut is a variety which should stand over successfully and it will be harvested in 1961. Taking a longer view, it is felt that



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HILGER M 500 AUTOMATIC POLARIMETER

The M 500 Automatic Polarimeter is used for routine analysis of sugars, chemicals, oils, beverages and, in fact, any optically active liquid. It can be used for continuous monitoring, checking at timed intervals, or for batch sampling. The output, which may be in sugar degrees or degrees of arc, is given in figures, and may be displayed, printed, or recorded. It reads to 0.05°S, though its operational accuracy is even better than this, and its range covers any interval of 14° on the sugar scale *Illustrated above.*

HILGER CONTINUOUS-FLOW REFRACTOMETER

The Continuous-flow Refractometer makes a continuous comparison between a flowing sample and a reference liquid. It can be used for measuring the concentration and testing the purity of any transparent fluid. The instrument is entirely automatic; any change in the refractive index of the sample is immediately indicated by the instrument. The output of the Continuous-flow Refractometer may also be used to make a permanent record of the concentration, or to initiate a control system to bring the concentration back to its correct level. *Illustrated on page 64.*

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the heavy silt deposit will have a beneficial effect and this should be some compensation for the adverse financial results expected from the 1960 crop.

THE latest U. K. company with sugar interests to issue its annual report is the Anglo-Ceylon & General Estates Ltd., though its sugar interests in Mauritius are exceeded by tea in Ceylon. Improved financial results are shown in the year to March 31, 1960, group consolidated trading profits being £1,108,-557 against £1,037,467 in the preceding year, and net profits of the parent company £462,-709 against £429,078. Total dividend payment is maintained at 2s. per 5s. stock unit.

The chairman and managing director—Francis W. Douse—considers the results satisfactory in the ruling conditions. Whereas the sugar crop of the Island for the 1959/60 season rose to nearly 580,000 tons as against 525,650 tons in the previous year, a 10.3% increase, the company's crop (including that of Mon Tresor & Mon Desert Ltd.) rose 13.1% to 70,900 from 62,710 tons. In both cases the 1959/60 figures are all-time records, due mainly to the favorable weather conditions. Sugar sales to all destinations are reported as realizing £34 10s a ton in 1959/60 as compared with £34 2s in 1958/59, a 1.1% rise.

Unfortunately in the current year the company's Mauritius crop and its physical assets suffered "tremendous" damage through two cyclones and the year's finances are thus, so far as the sugar element is concerned, dependent on the amount received from the cyclone and drought assurance fund—a fund which the chairman says is adequate to cover the loss in proceeds of the sugar crop.

The company has 14,937 acres under cane in Mauritius divided as follows: Britannia group estate, 4,816 acres; Highland group estate, 3,944 acres; and Mon Tresor & Mon Desert Ltd., 6,177 acres.

THE International Sugar Council issues its "Yearbook" for 1959, the 13th issue and a handy pocket-size reference *vade-mecum* of 209 pages which is excellent value for its very reasonable cost.

The statistics which relate to centrifugal sugar only and the actual position as far as possible and not necessarily that required to implement the international sugar agreement, cover a wide range. In the main they consist of 87 country tables, giving production, imports, exports, consumption and stocks, and in most cases over a period of years. There is also a series of tables on world data—supplies, requirements, prices and the like—and useful tables of equivalency.

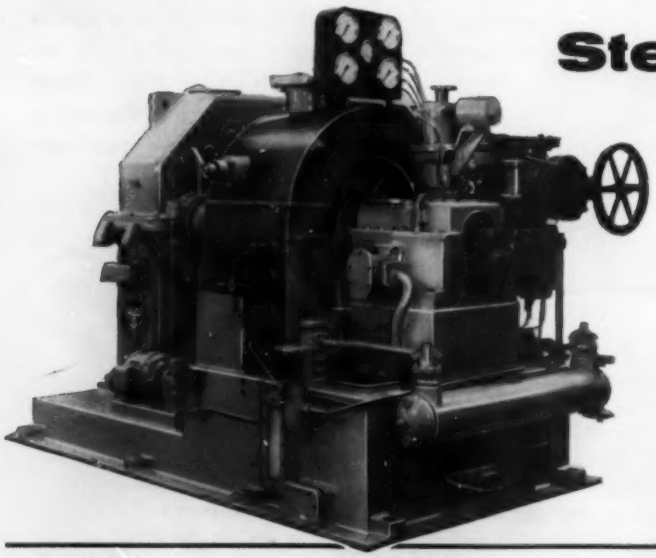
It is noted with interest that U.K. consumption per caput of refined sugar (based on June 1959 population), at 52.8 kg. is the third both in Europe and the world, being exceeded only by 53.5 kg for Iceland and 53.0 kg for Denmark. That for the U. S. (continental) is 43.7 kg and Canada 42.7 kg.

The Yearbook is obtainable from the ISC at 28 Haymarket, London, SW 1. price 20s post free, while that of its monthly Statistical Bulletin is 10s (annual subscription £5).

TWO new publications of the UK Ministry of Agriculture are worthy of note. An extensive revised edition of "*Sugar Beet Cultivation*" (114 pages) gathers together much of the work done for the Sugar Beet Research Committee. This covers most aspects of cultivation, but special attention is given to the advantages of down-the-row thinning over cross-blocking and to weed control by chemicals. Bulletin No. 153 also has an entirely new chapter on the economics of sugar beet growing which provides a valuable guide to the essential factors in cost calculations.

In a second edition of "*Sugar Beet Diseases*" (Bulletin No. 142, 80 pages, 55 illustrations), Dr. Raymond Hull, head of the Rothamstead Field Station and a world authority, summarizes his knowledge and experience in a form likely to be of service not only to the plant pathologist but to all engaged in growing or handling sugar beet. Valuable new information is given on virus yellows and its control, problems of nutritional deficiency diseases, control of seedling leaf and vascular diseases, weather, chemical and insect injury, genetic abnormalities, and root diseases.

These publications are available from H M Stationery Office, London, England, price 8s 8d and 7s lld by post respectively.



Steam Turbines for the Sugar Industry

One of a number of Brotherhood Steam Turbines installed in a Swaziland sugar factory

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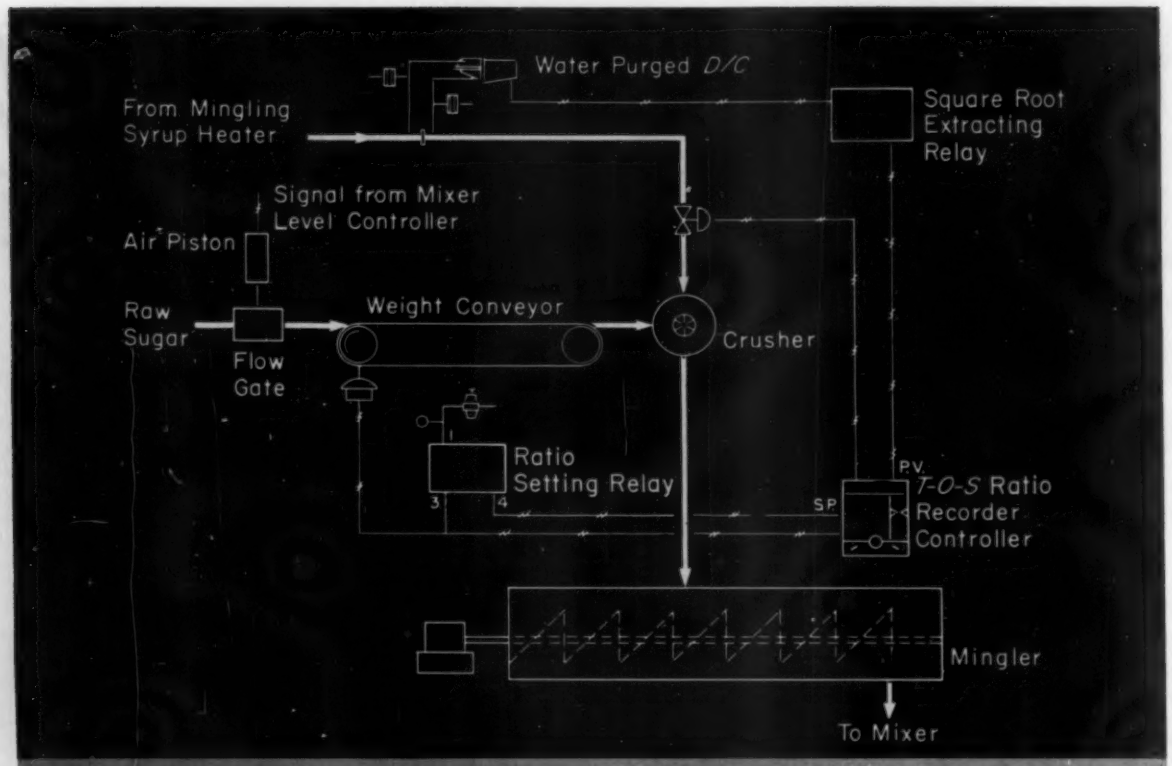

The system measures the weight of the raw sugar on the conveyor and automatically ratios the flow of mingling syrup. Flow of raw sugar through the flow gate is regulated by the mixer level controller which positions an air piston to operate the flow gate. Weight of raw sugar on the conveyor is sensed by a pneumatic weight transmitter and recorded on a *Tel-O-Set* two-pen ratio recorder controller. The signal from the same transmitter also feeds to a ratio setting relay which modifies the signal. This signal continuously positions the set-point of the *Tel-O-Set* recorder controller. The mingling syrup flow is measured with a water-purged *Differential Converter* and transmitted to a square root extracting relay having a linear output. This output is then fed into the recorder controller and serves as the process variable. Controller then throttles valve on mingling syrup line to add correct proportion of syrup to raw sugar.

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Maintaining adequate control during the mingling process can be a sticky problem. Impurities in the syrup can adhere to the crystals, making separation in the centrifuge a difficult task.

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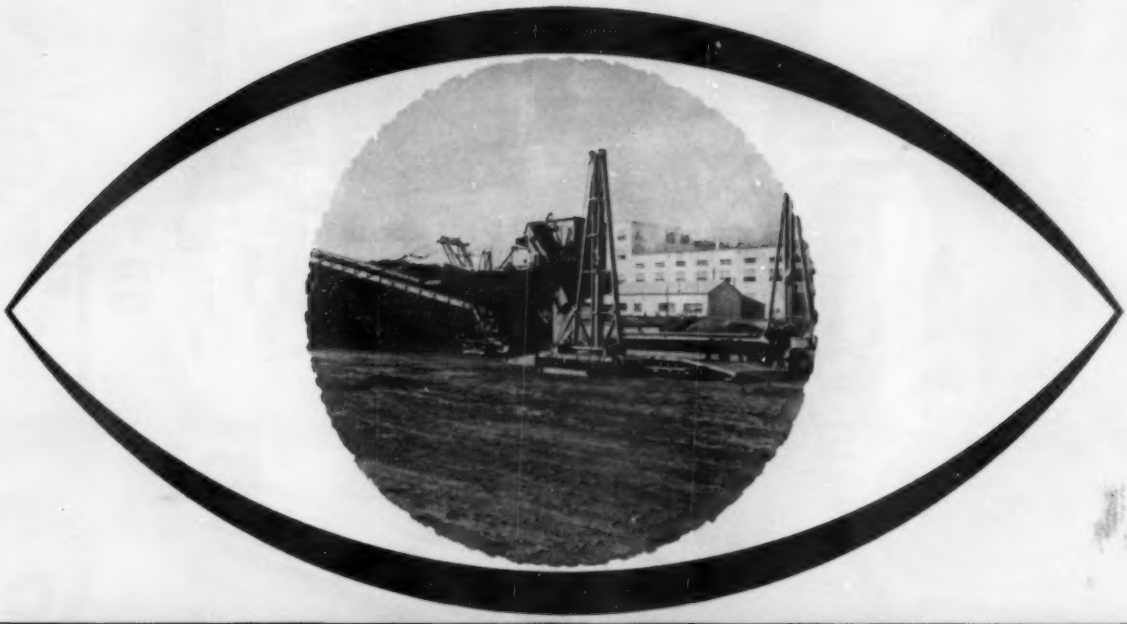

The beet season is well along . . . enough for you to judge how good a screening job your piler is doing. In every field test to date the Silver Grab-Roll Screen has proved best by margins of up to 200% in removal of dirt and clods. This applies to screen conversions in older Silver pilers as well as to completely new Silver machines.

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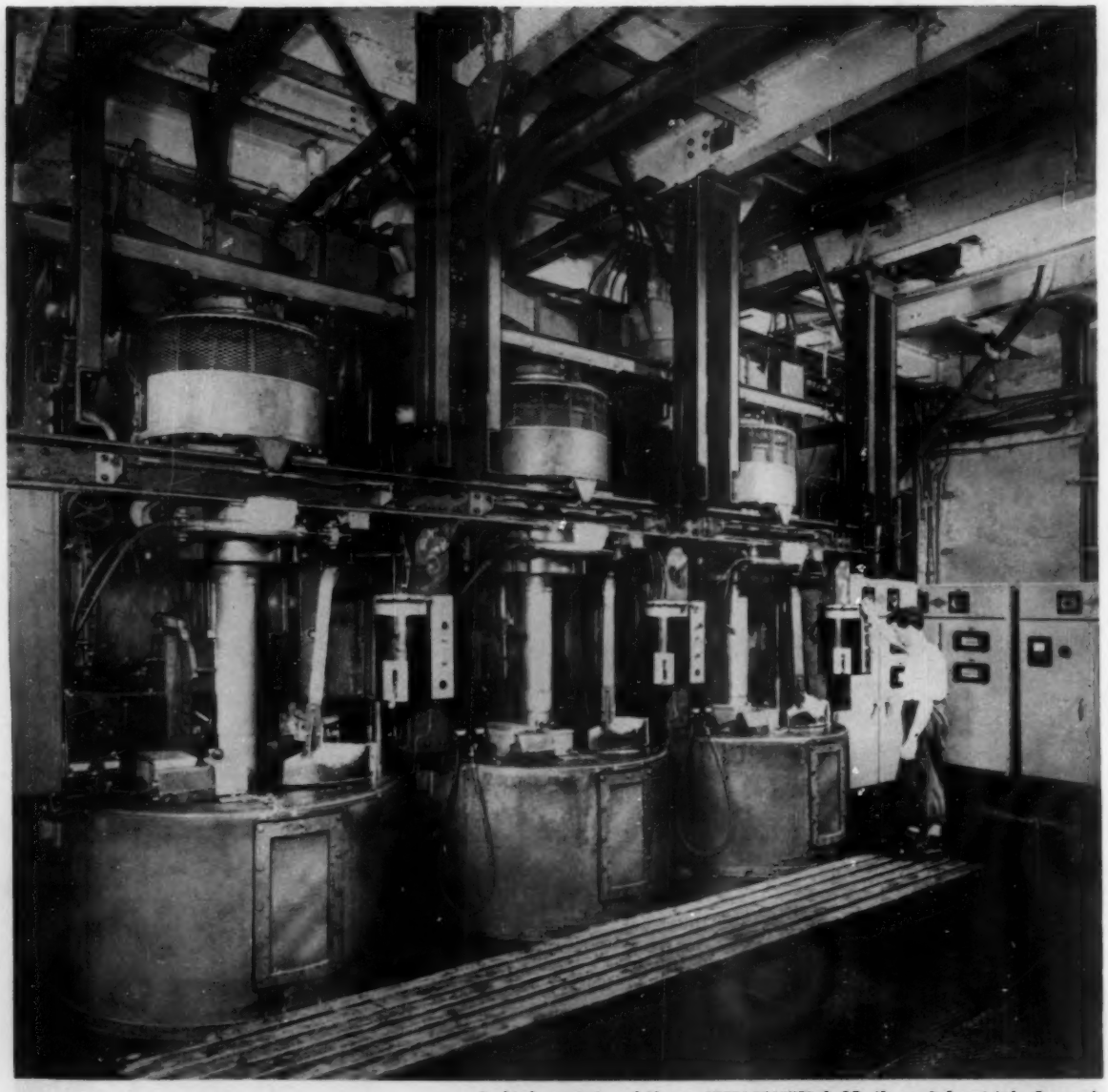

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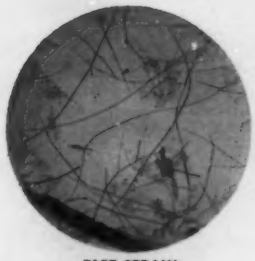
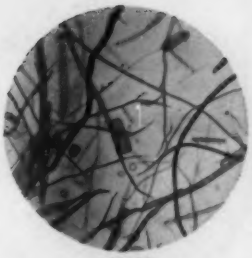
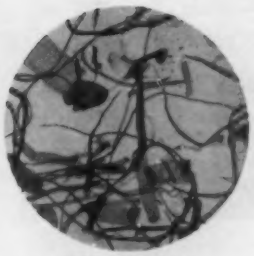


RICE STRAW



REEDS
(phragmites communis)



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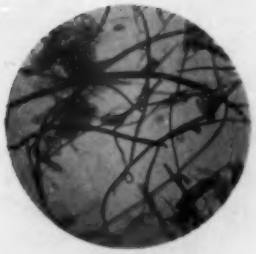
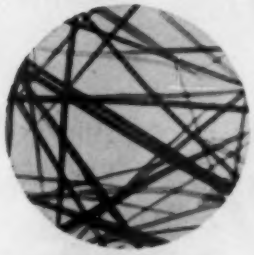
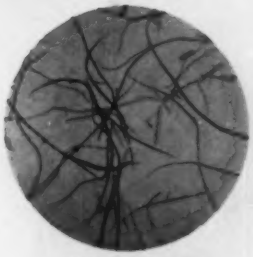


CORN STALK
(before depithing)



SUGAR CANE BAGASSE
(completely depithed)



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around the world

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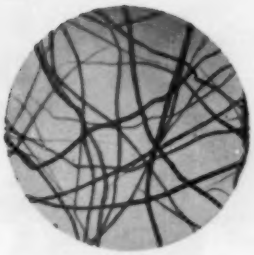

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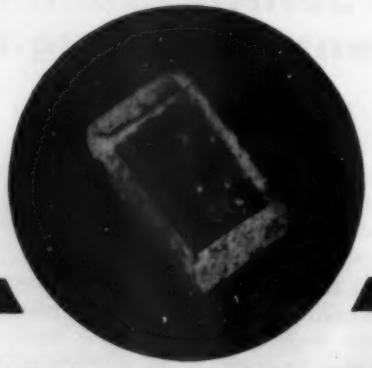

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For every sugar cane growing and handling operation, there's a tractor or tool built by International Harvester to help you do the job quickly and economically.

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Ask your International Distributor to tell you more about power and equipment for cane growing and handling.

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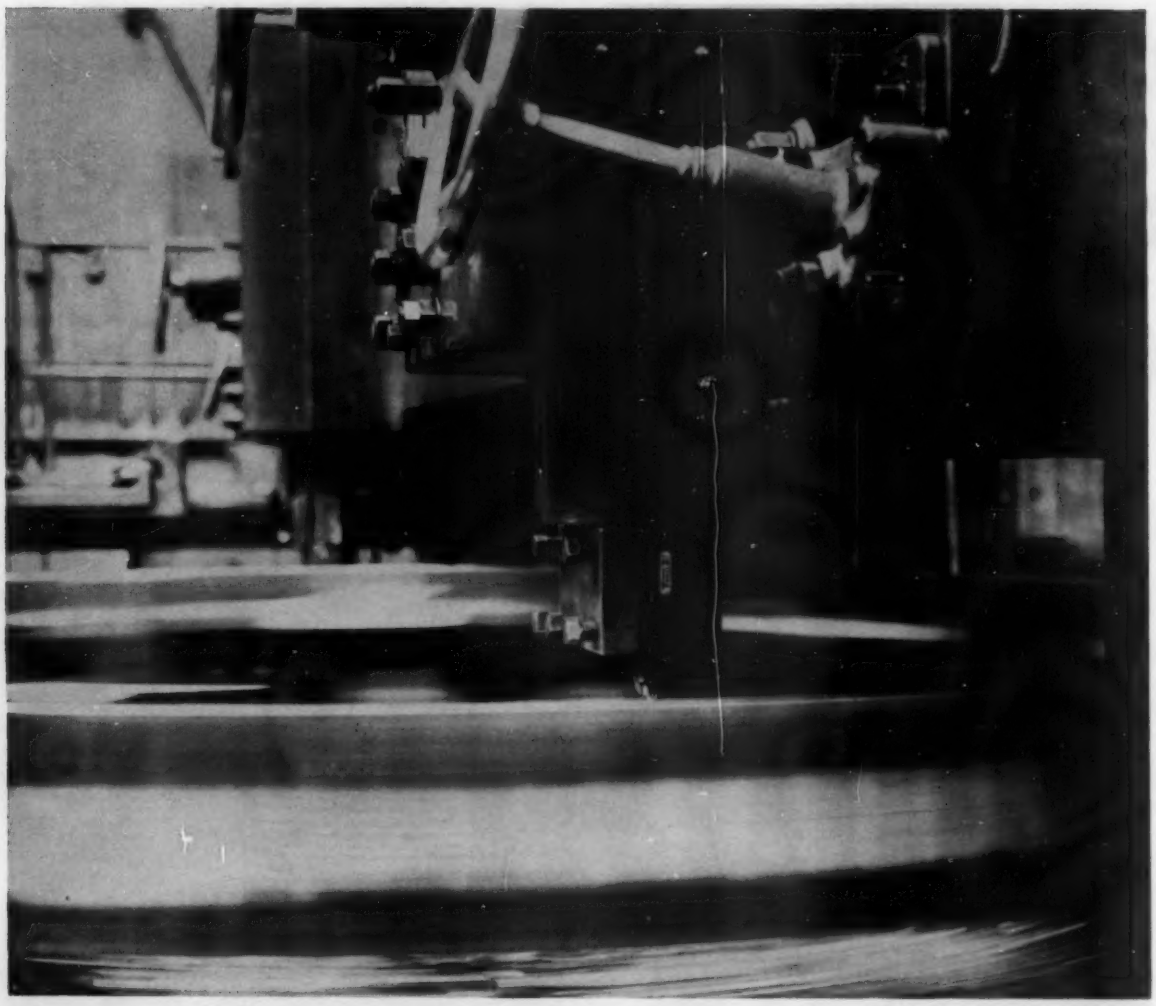

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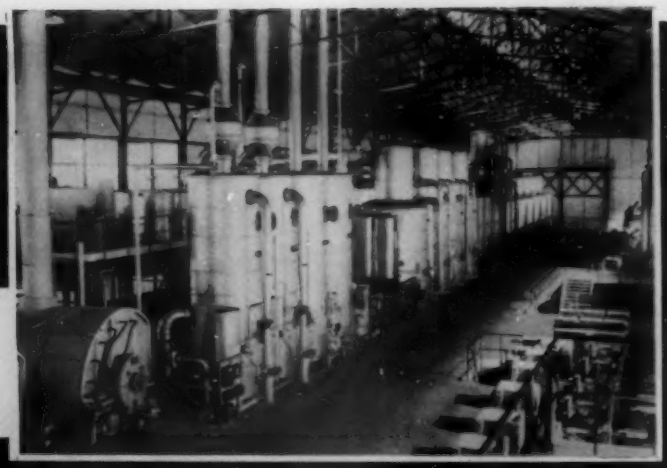

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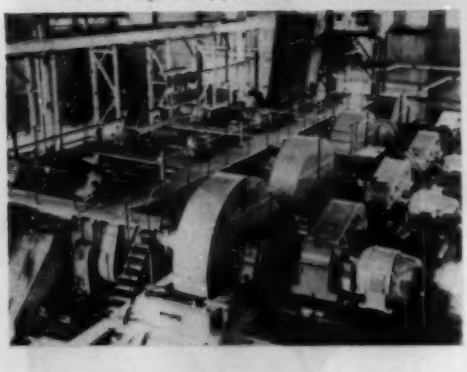
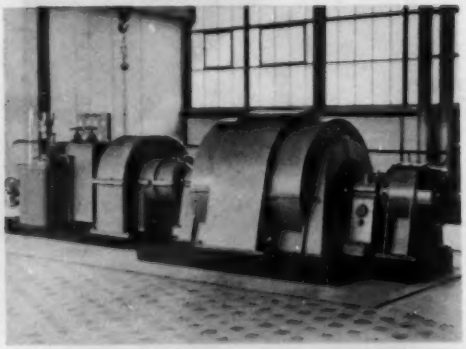


1800 kW turbo-alternator.
Malatya sugar factory (Turkey)



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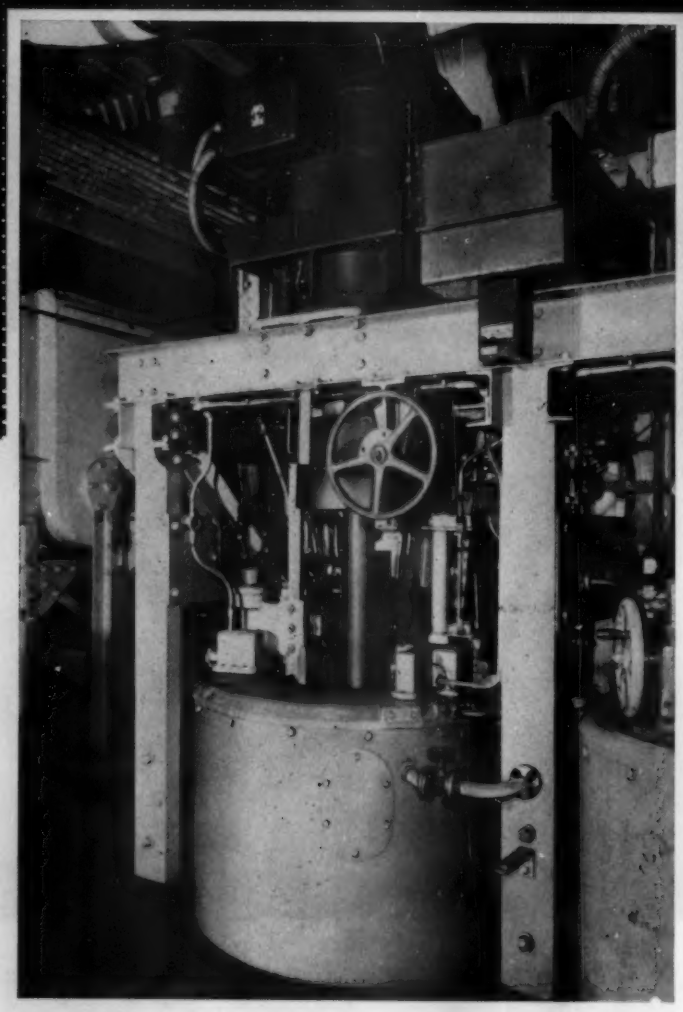

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persistent selective safe

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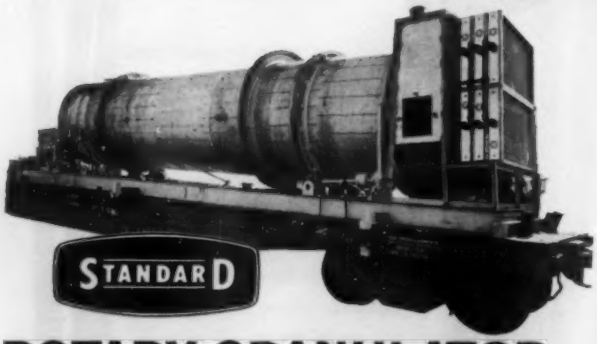

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READY TO ROLL

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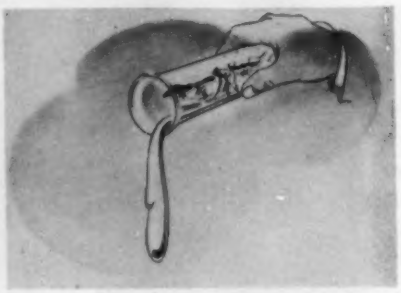

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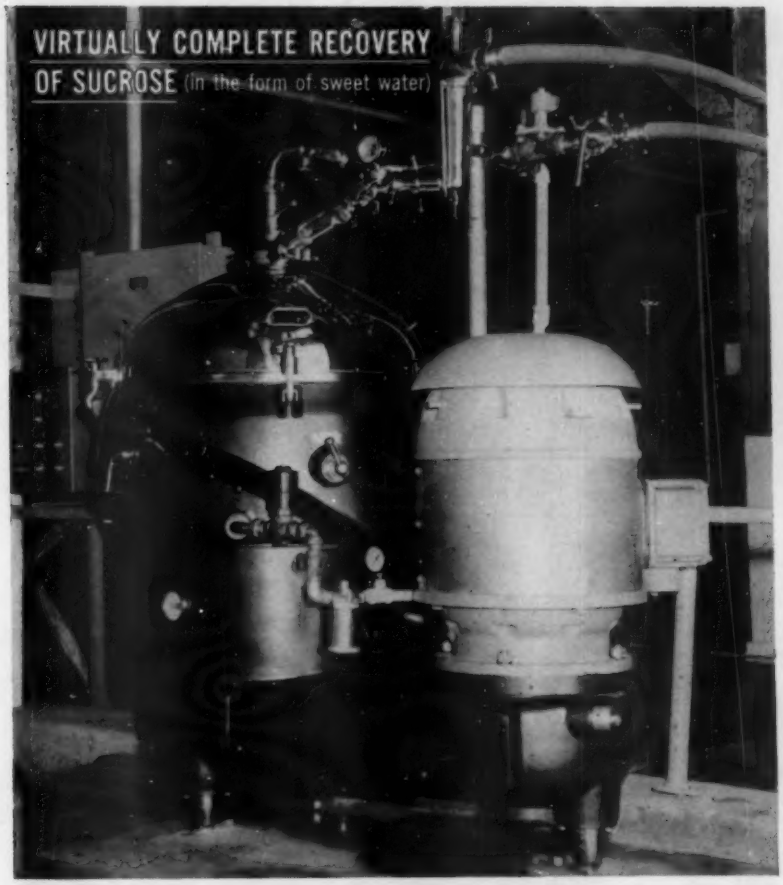

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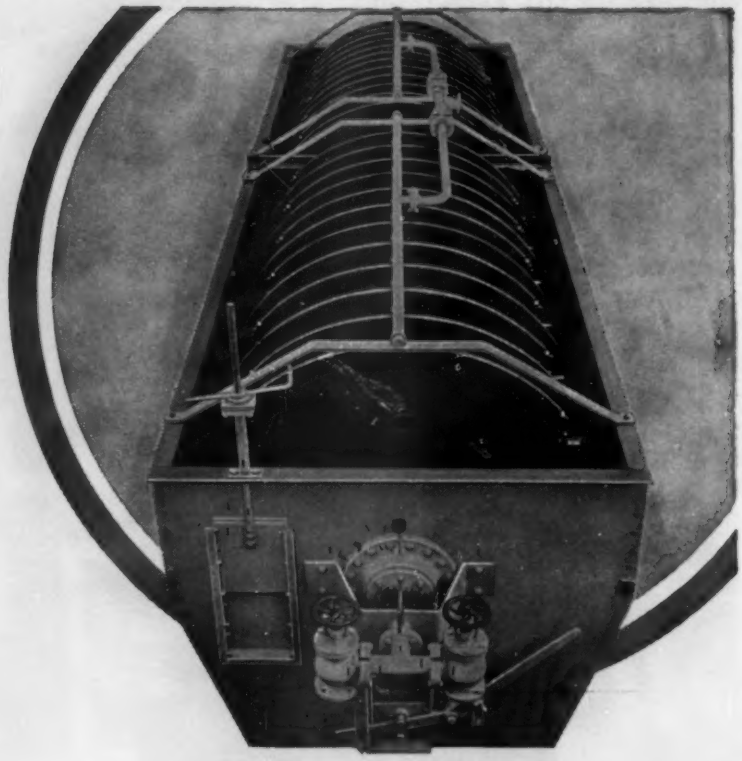

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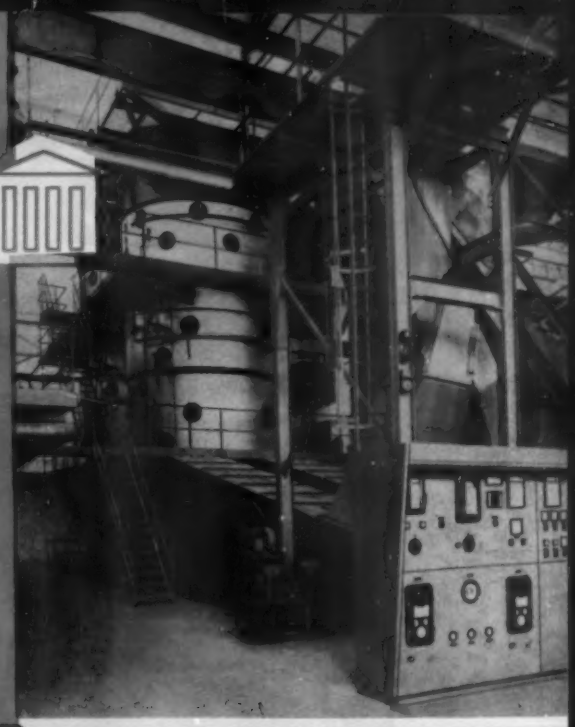

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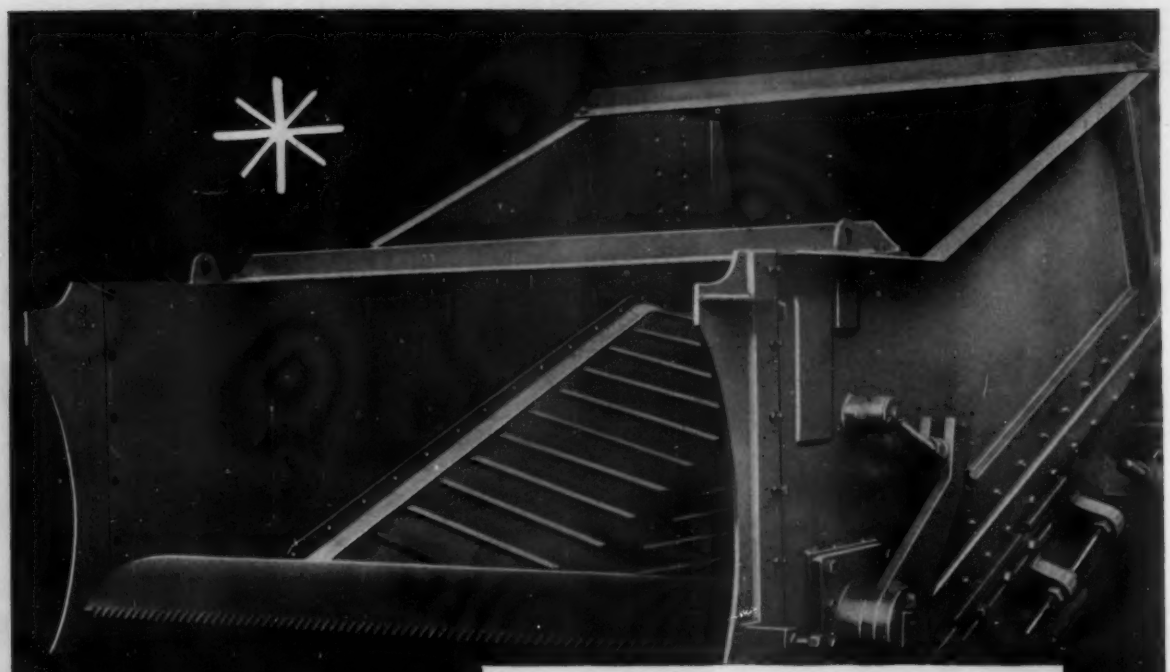

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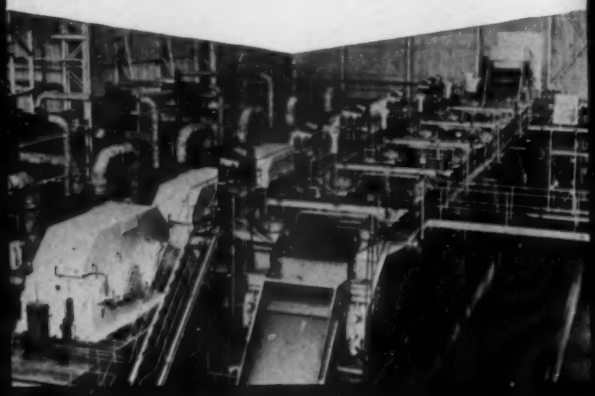

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Turbine Mill Drive In Florida

Modernization Program At Okeelanta

By Ing. Ubaldo Villar Lorenzo

A MODERNIZATION program intended to increase milling capacity at Okeelanta in Florida was established in 1953 with a view to meeting increased demand for sugar in that area.

In 1953 the tandem consisted of one set of knives, a double crusher and three mills with 31-inch diameter rolls. The first crusher, with three-inch grooves, was driven by a 20 by 42 inch Corliss engine. The second crusher, with similar grooving, and the three mills were all driven by a single 30 by 60 inch Corliss engine. Steam pressure was 125 lbs/psi.

In the period from 1953 to 1959 cast steel mill housings designed for 36 inch rolls were installed together with the larger mill rolls; steam pressure was increased to 150 lbs/psi and the second crusher was removed. Edwards hydraulic equipment was installed and Link-Belt vibrating screens provided.

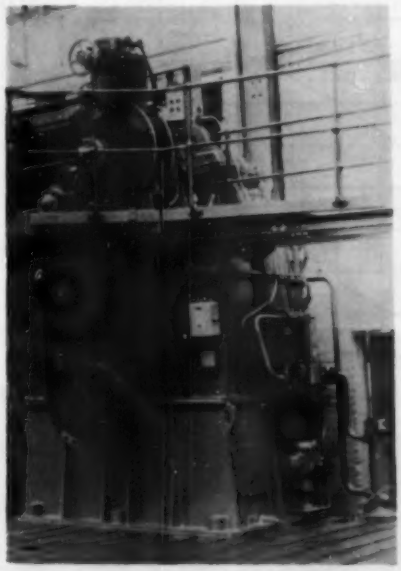
For the 1959-60 crop a second set of cane knives driven by a 250 hp. steam turbine was added. New intermediate carriers with pneumatic clutches and a fourth mill designed and built by Duncan Stewart were installed. Individual Weir steam turbines were provided for each mill drive. These are single stage turbines operating at 250 lbs/psi and 100°F superheating.

Prior to 1953 average cane ground was 1200 tons per 24 hours. Following improvements, the 1959-60 crop was ground at the rate of 3200 tons per 24 hours.

Original plans called for the replacement of the remaining crusher by two additional mills; but for the 1960-61 crop one additional mill will be installed and the crusher will be retained. For the 1961-62 crop the crusher will be removed and another new mill with two-inch grooving will be added bringing the tandem to a total of six mills as shown diagramatically in Figure 1.

The Weir steam turbines for individual mill drive, illustrated in Figure 2, are single stage, 400 BHP turbines working on 200-225 lbs/psi and 100°F superheated steam. Steam consumption at various RPM and other details are set forth in Table 1 accompanying this article. Graph (Figure 3) plots the BHP against RPM when using eight or ten nozzles. A second graph (Figure 4) shows steam consumption per hour per brake horsepower plotted against revolutions per minute. Figure 5 depicits the panel board for control of the turbines.

Fig. 2



The author had an opportunity to visit Okeelanta in December 1959 and observed the highly satisfactory operation of the turbines and gears (illustrated in Figure 6). The vertical installation of the turbines, typical of the Duncan Stewart system, saves space. The Woodward regulator gives precise speed control; forced lubrication with sealed journal bearings gives additional advantages. As may be seen in Figure 7 the steam turbine is of simple design with coupling eliminated because the helical pinion is an integral part of the rotor shaft. The rotor is made of nickel-chromium-molybdenum, nickel plated to increase corrosion resistance. The shaft in contact with bearings and packings is chromium plated. The turbine casings are made of cast steel. The arrangement makes it possible for one operator to supervise the entire tandem operation. Three reducing gears drop the speed from the turbine at 5,500 RPM to 26 RPM at the mill. During the author's visit the turbines were working at 200 lbs/psi with 12 lbs/psi back pressure using eight nozzles. On the control panel the first mill turbine

Fig. 1

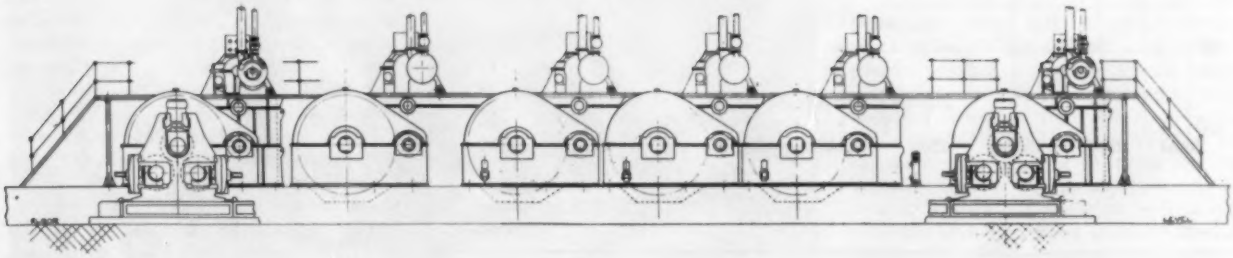
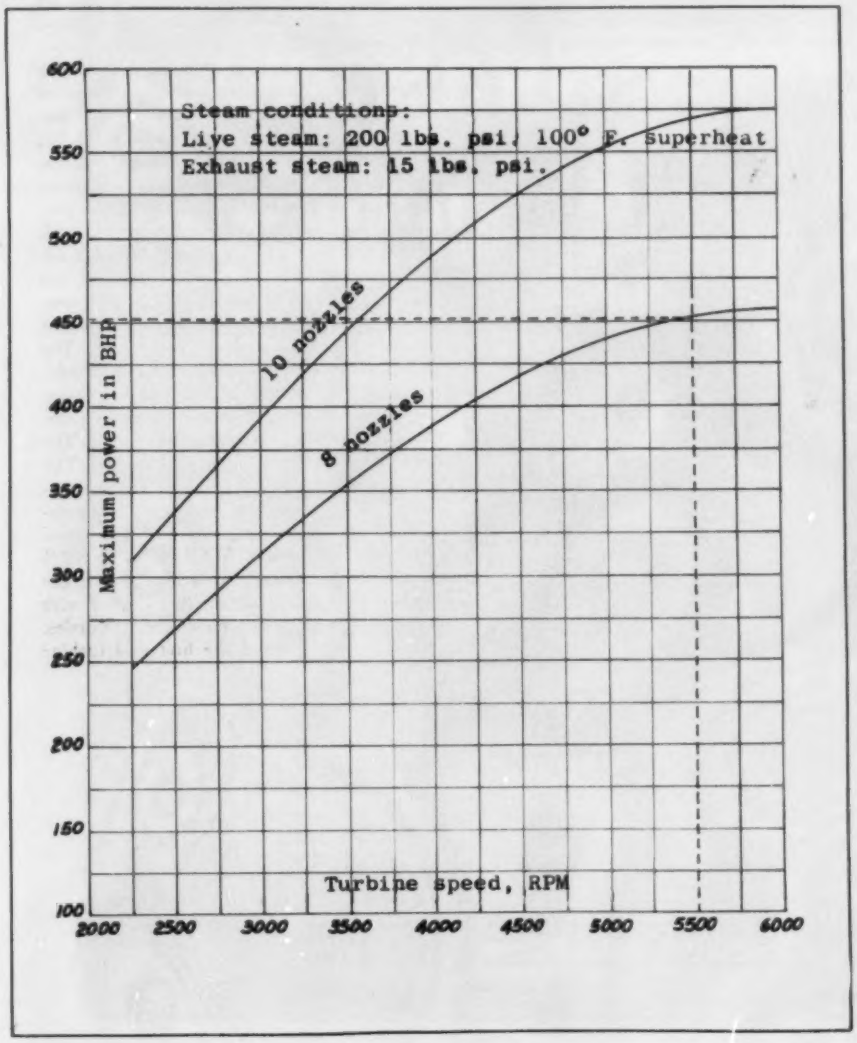


TABLE 1

STEAM TURBINE CONSUMPTION

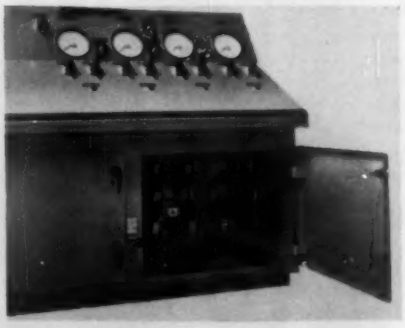
	5500 RPM	*5000 RPM*	*4500 RPM*	*4000 RPM*
Steam Pressure to Turbine, Lbs/psi	215	215	215	215
Heat Loss Through Nozzles, BTU/Lb	164	164	164	164
Maximum Steam Capacity, Lbs/hr	23900	23900	23900	23900
Turbine Steam Consumption, Lbs/HP/hr	28.7	29.9	31.8	34.1
Full-load Indicated Horsepower, IHP	831	800	750	700
Losses, Turbine Gear, HP	19+17	15+16	12+17	9+14
Maximum Brake Horsepower, BHP	795	769	721	677
Available Brake Horsepower, BHP	400	400	400	400
Losses, HP	19+8	15+8	20	17
Indicated Available Horsepower, IHP	427	423	420	417
Total Consumption of Steam, Lb/hr	12300	12670	13350	14200
Number of Nozzles Open (Maximum 15)	8	8	9	10
Linear Speed of Blades (Y), ft/sec	576	525	469	418
Steam Velocity (C), ft/sec	2870	2870	2870	2870
Ratio, Y/C	.201	.183	.164	.146
Blade Efficiency	.662	.630	.595	.550
Total Efficiency	.540	.518	.489	.452
Stage Efficiency	.815	.825	.825	.820
Turbine Steam Consumption, Lb/BHP/hr	30.8	31.5	33.4	35.5

Fig. 3



was shown as operating at 4,000 RPM, the second mill at 3,650, the third at 3,500 and the fourth at 3,200. Referring to the graph (Figure 3), despite back pressure of 15 lbs/psi, the BHP of the first mill was 387 which, multiplied by 36 Lbs/BHP/hr. of steam shows a consumption of steam amounting to 13,932 Lbs/hr. The second mill using 365 BHP and 38 Lbs/hr. of steam would use 13,870 lbs of steam per hour; the third mill with 355 BHP multiplied by 39

Fig. 5

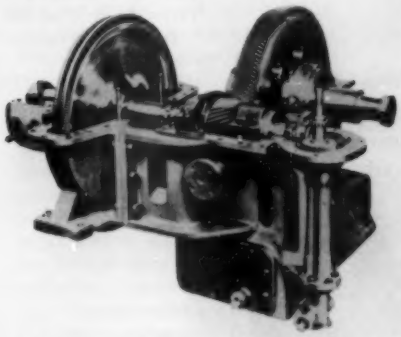


Lbs/BHP/hr. uses 13,845 lbs. of steam per hour and the fourth mill, 340 BHP times 42 Lbs/BHP/hr. would require 14,280 Lbs. of steam. The total is therefore 55,927 Lbs. steam per hour. In addition to the mill drive turbines there is one Corliss 200 HP engine driving the crusher and a steam turbine of 250 HP driving the cane knives. Assuming a conservative figure of 30 Lbs/-BHP/hr. for the knives and crusher there would be an additional requirement of about 13,500 Lbs/hr. of steam. Rounding off the figure for the turbine requirements to 56,-000 Lbs/hr. and the additional requirement of 13,500 Lbs/hr. for crusher and knives,

we have a total theoretical steam consumption of 69,500 Lbs/hr. However, a flow meter installed on the main steam line indicated delivery of 50,000 Lbs/hr. for all the above services. It is clear that either the flow meter was inaccurate or the efficiency of the turbines was higher than indicated by the theoretical graphs.

The first installation of a turbine to drive a sugar mill was made at Central Cacocum in Oriente Province of Cuba in 1946. This was followed shortly afterwards by the steam turbine installed at Lula in Louisiana. A large number of turbines was installed in

Fig. 7



other parts of the world for mill drive, but multi-stage turbines were preferred because of their lower steam consumption where high steam pressures, superheating and low back pressures exist. Because sugar mills usually have no high pressure live steam, no superheating and do require a certain amount of exhaust steam for the process, and because of the higher initial and maintenance cost, the author does not consider it advisable to install multistage steam turbines for mill drive.

It is of interest to note the number of

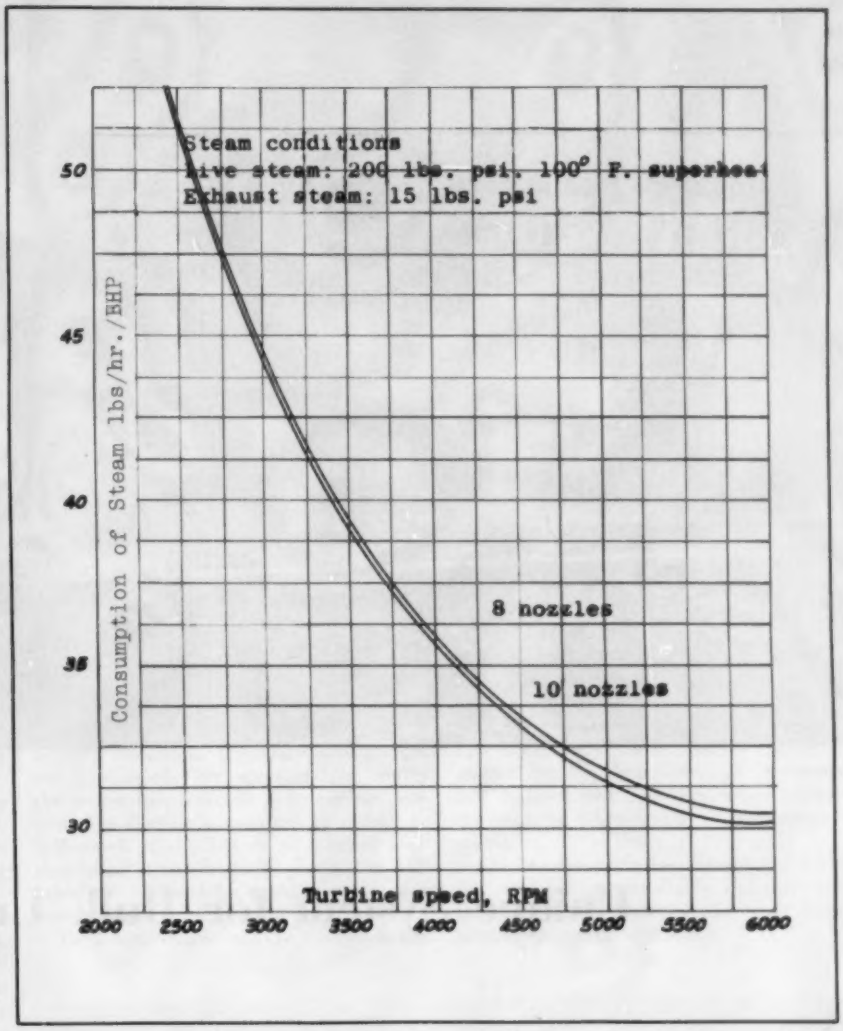
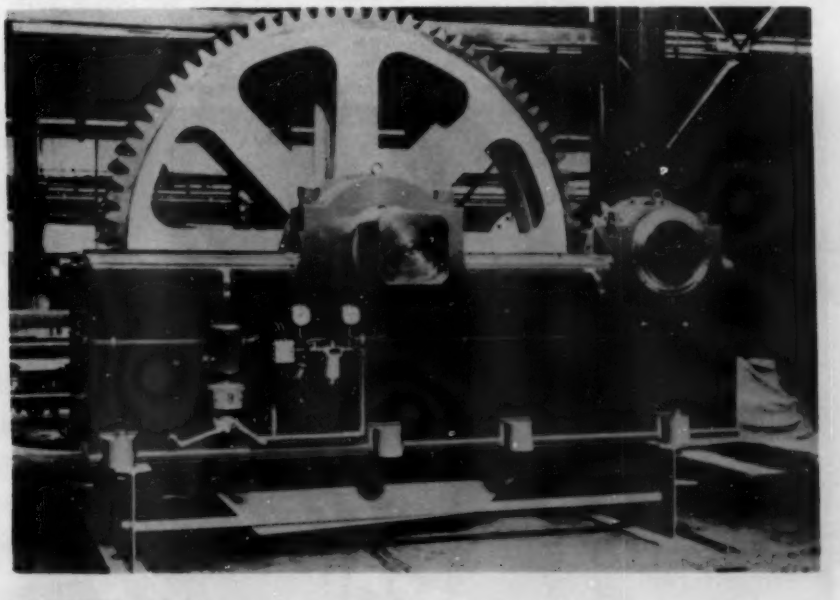


Fig. 4

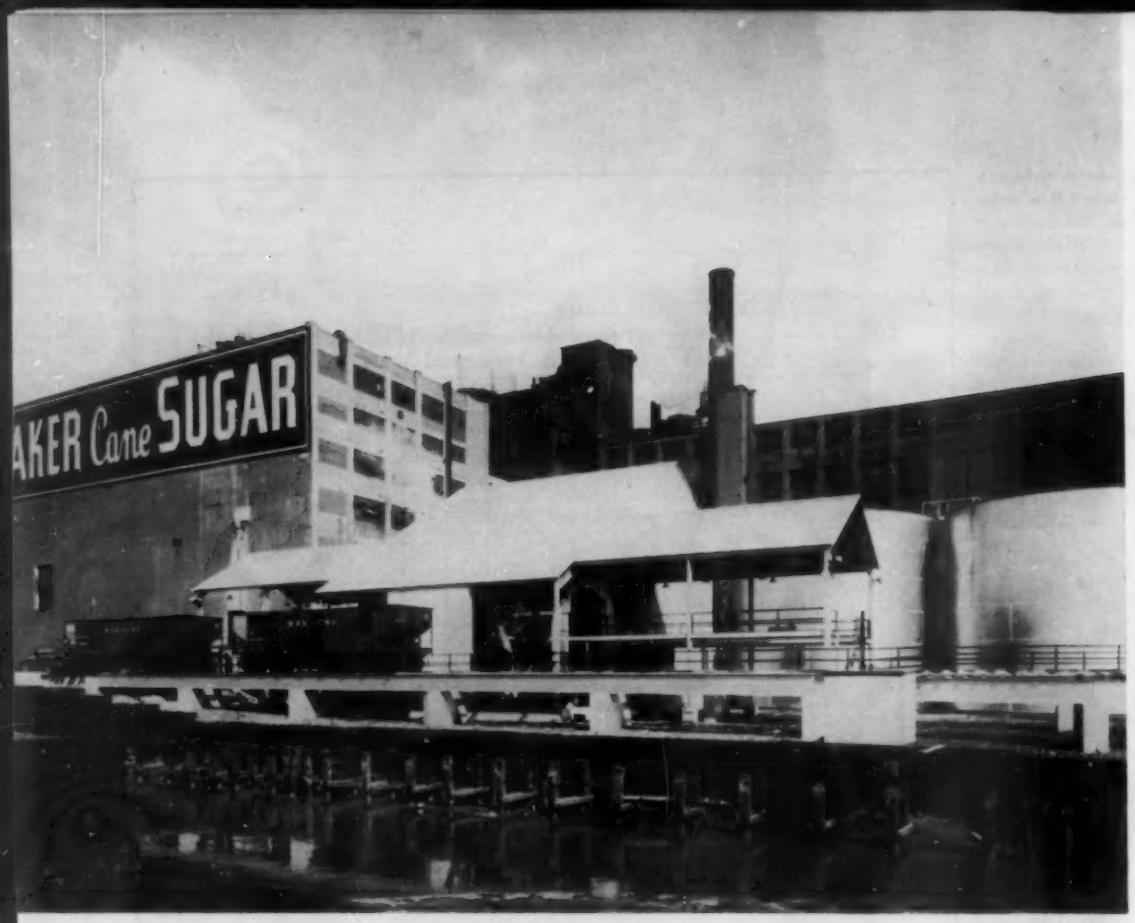
Fig. 6



Weir turbines installed by Duncan Stewart in the last five years:

Country	*Turbines*	*Years in Operation*
Jamaica	1	2
Trinidad	2	2
British Guiana	5	5
South Africa	6	5
India	2	3
Florida, USA	4	1

(The criteria for single stage steam turbines given above may be correct for raw sugar mills without refining capacity, distilleries or other annexed industries requiring steam. With mills that have refining capacity, distilling installations or using steam for pumping irrigation water affecting the heat balance; or where the bagasse, normally used as fuel is used to manufacture by-products, it might be well to consider the saving on steam available through the multi-stage steam turbine. Editor.)



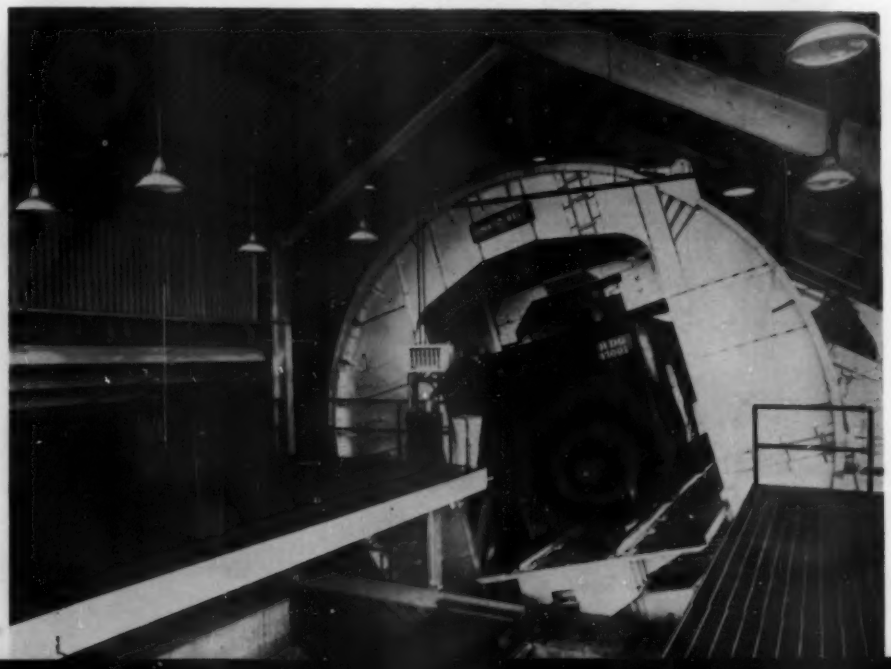
National Sugar's refinery on the Delaware River provides minimum space for receiving raw sugar in bulk. A unique system was devised to meet these conditions. Illustration shows the receiving area for 70 ton hopper cars.

Unique System for Bulk Unloading

A ROTARY car dumper that also rolls up a 30-degree incline is the heart of a new raw sugar unloading system that has brought important advantages to the National Sugar Refining Co. in the face of severe obstacles.

The system, installed at National Sugar's Philadelphia refinery along the Delaware River, permits receiving raw sugar in bulk in spite of extreme space limitations. The new system has already handled 560 tons in one 47-minute period. An optimum capacity of 600 tons per hour is expected with the installation of Syntron vibrators and with proper scheduling of cars.

The installation was designed and constructed by The Austin Company to overcome two main stumbling blocks: a tightly restricted unloading area which precluded the use of a standard rotary car dumper and the need for a waterproof receiving pit, protected year-'round from the weather. The cost would have been prohibitive to provide a waterproof pit below tide level to house the hoppers receiving the sugar.



Hopper cars are covered with nylon tarpaulins for the short trip from the unloading dock to the refinery; tarpaulins are removed, rail cars are moved into a rotary car dumper which rolls up a 30 degree incline to dump the sugar into hoppers well above high water.

The car dumper, designed and constructed by the Austin Company, may be seen rolling up the rails as it rotates; here it has rotated 45 degrees. One of the rails on which it ascends 17½ feet, may be seen at lower right.

To get around the lack of space, the required track work was built on a trestle, with the tracks 10 feet above mean high water. It was then possible to deliver the 70-ton hopper cars to the car dumper. The dumper rolls the cars up an incline so that they can discharge sugar into hoppers located well above tide level. From the hoppers the sugar is fed onto two belt feeders and then to a 600-ton-per-hour belt conveyor that delivers the sugar to a warehouse for processing or storage.

Incoming sugar is unloaded from sea going vessels into weigh hoppers at the Port Richmond Yard, Philadelphia, and is then transferred to rail cars that carry it 2.7 miles to the refinery. Nylon tarpaulins are tied down over the cargo to insure against sugar loss in transit. At the refinery, cars are backed onto a siding and moved into unloading position by a Whiting Trackmobile. The tarpaulins are removed under cover just before unloading. During this process, the rotary dumper rolls a car up the 30-degree incline to a height of approximately 17½ feet. In maximum dumping position, the car is at a 150-degree incline from the vertical. The total dumping cycle takes three minutes, not counting time for spotting and removing cars or for cleaning and washing them.

Engineers of Link-Belt Co., who collaborated with the Austin organization in working out all of the mechanical features of the installation, designed the special car dumper. It consists of a 49½-foot-long transfer table arranged to handle standard gauge open hopper railroad cars up to 70-ton capacity. Gross weight of the dumper, including a car, is approximately 97 tons.

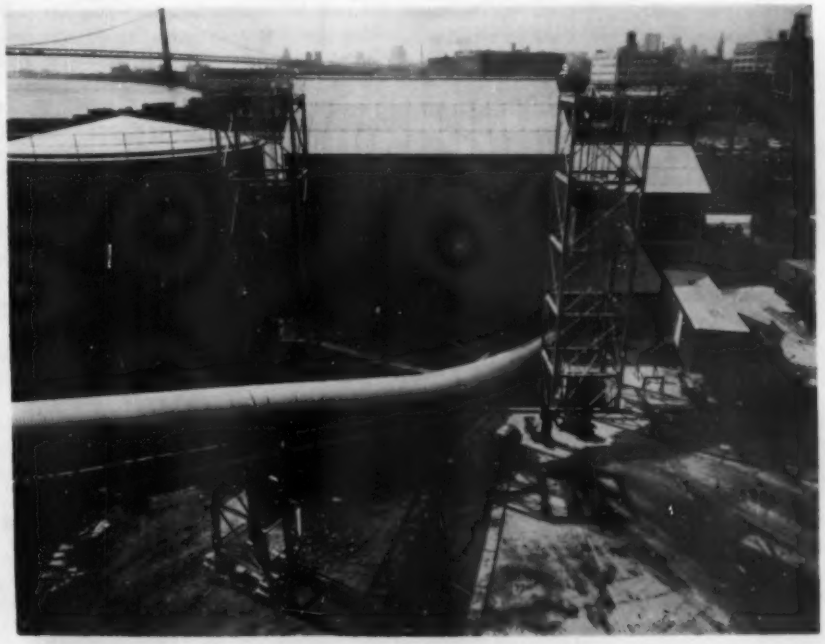
The car dumper has two sets of completely automatic boom-type clamps which are lowered onto the sides of the car to hold it tightly in position on the dumper. Spanning the full width of the car, the clamps are designed to clear the material in the car when in position. Ends of the clamp beams engage one side of the car and hooks engage the other side, allowing for irregularities in height of car sides. Each clamp is provided with its own lowering and holding equipment, including a five-horsepower motor, brake, double reduction parallel shaft speed reducer and gears.

In operation, the clamps take hold when the car has been rotated approximately seven degrees. Rotation continues as the dumper rolls up the 30-degree incline to its dumping position over the receiving hopper. The motor is automatically stopped by a rotary limit switch at the end of the forward rotating movement. The contents of the car are discharged. The operator then moves the master switch handle to its reverse position. The dumper accelerates in reverse to full speed. At 15 degrees of starting position speed is automatically reduced to half speed for regenerative braking action, and rotation ceases.

The operator may stop the dumper at any intermediate position, simply by returning or releasing the master switch handle to neutral position. The dumper is then held in place by a spring-set brake.

Raw sugar passes from the Link-Belt-designed hopper through eight openings to two feeder belts. These feed the sugar to a 36-inch wide, 600-ton-per-hour horizontal and inclined belt conveyor which delivers the sugar to a warehouse for processing or storage.

The car dumper, tarpaulin removal areas, belt feeders, belt conveyors and operator's station are all enclosed for year-'round weather-protected operations.



The conveyor carries sugar from the hoppers into which the car dumper discharges up a 20 degree incline to warehouse. Conveyor system was furnished by Link Belt Company.

facts about sugar

NEW YORK, SEPTEMBER 28, 1960: Dominican Republic sugar (321,857 tons) on September 23rd was authorized for non-quota purchase during 1960, but with the condition that an entry fee of 2¢ per pound be paid to the U. S. Government. Despite this penalty, B. W. Dyer & Company, Sugar Economists & Brokers, estimates that it will be to the Dominican Republic's advantage to ship this sugar to the U. S.

At the time this authorization was made, the domestic, duty paid, spot (#6) price of raw sugar was $6.65 per 100 lbs., compared with a world (#4) spot price of $3.25. After adjusting for full duty and estimated freight, the premium on Dominican sugar in the U. S. market appeared to be about $0.38 per 100 lbs. However, on September 23rd, October #4 futures were $3.08 and 1961 futures were around $3.00, which indicates that the $3.25 spot was not realistic, and the actual premium in the U. S. market probably was larger, especially with prospects for a continuation of large world surpluses.

The next trading day, September 26th, the duty paid #6 spot price declined to $6.53, and, although the #4 spot remained unchanged at $3.25, the #4 futures advanced a few points.

Sugar quotas and non-quota purchase authorizations, including the Dominicans, on September 23rd totalled 10,164,000 short tons, raw value. However, the Dominican Republic was estimated to have only about 175,000 tons available for the U. S. at that time, with new crop production providing possibly an additional 100,000 tons. Thus, after deducting mainland cane and beet deficits of possibly 270,000 tons, the actual amount of sugar available probably will be about 9,850,000 tons. This compares with potential refined sugar distribution of about 9,350,000 tons in 1960.

Robert H. Shields, President of the U. S. Beet Sugar Assn., at a press conference on September 1st emphasized, "Plenty of sugar will be available for the U. S. market from domestic and foreign sources during the balance of this year and all of next year—whether or not imports from Cuba and the Dominican Republic are permitted." At the same time he stressed the need for early government decisions as to where foreign supplies are to come from in 1961—and prompt adjustments of sugar trade buying and selling practices to reflect those decisions. Also, that a bumper sugar beet crop is in prospect this fall, with sugar production estimated at a record 2,400,000 tons. Consumers' requirements for 1961 were estimated at about 9,600,000 tons, with domestic producers supplying 5,200,000 tons, and, under regular quotas, foreign countries, other than Cuba and Dominican Republic, 1,200,000 tons. The 3,200,000 ton balance would be obtained elsewhere. In 10 countries which could easily serve the U. S. market, Mr. Shields estimated that a minimum of 4,000,000 tons will be available to us in 1961.

(Department of Agriculture lifted acreage controls on the 1961 sugar beet crop in October. Robert H. Shields, president of the U. S. Beet Sugar Association, forecast a crop of between 2,600,000 and 2,700,000 tons next year compared with an estimated production of 2,400,000 tons this year. EDITOR)

Unofficial reports in mid-September indicated that sugar cane in Florida was bent almost flat by hurricane Donna, but, as hand cutting is used in that area, it is believed that losses will be held to a minimum. In Louisiana, hurricane Ethel affected only the extreme southeast where citrus is the only crop. The cane crop was making above-normal growth at that time.

The world (#4) spot raw sugar price remained at 3.25¢ per pound during September, the minimum level decreed by Cuba. France in mid-September offered new crop beet crystals and/or cane sugar from its colonies, but then rejected the bids because they were too low. India also issued export licenses for 5,000 tons.

The Soviet Union has promised to buy all of Cuba's sugar production formerly sold to the U. S., according to a press report quoting the September 22nd edition of the government-controlled newspaper El Mundo. "If the U. S. won't buy your sugar, we will buy all 3,000,000 tons annually, despite difficulties of transportation," Soviet Ambassador Sergei Kudryavtsev was quoted as saying.

The U. S. Department of Agriculture reports that almost 1,000,000 tons of the Cuban sales to Russia for shipment in 1960 remain to be shipped in the last four months of the year. Difficulties are reported in handling Cuban sugar while refineries are preparing for processing the large Russian beet crop due to start in September.

The Board of Managers of the New York Coffee & Sugar Exchange announced in September that new sugar trading contracts were being prepared for approval by members. One of these, the proposed new world (#8) contract will be traded concurrently with the #4 contract, but will provide for delivery of sugars on an f.o.b. and stowed basis from producing countries in the Greater Caribbean area, including Mexico and South America (provision for delivery from other areas will be at the discretion of Exchange officials). The other contract is a revised "Domestic" #6, representing the recent changes in the status of the U. S. quota sugars.

Nominations are requested from members of the sugar industry to select the "Sugar Man of the Year" for 1960—to receive the Dyer Memorial Award. Nominations must be received by B. W. Dyer & Company not later than January 9, 1961. The purpose of the award is to give recognition to some sugar man making a significant or meritorious contribution to the sugar trade—particularly a new idea or a proven development. The first eligible person to nominate in writing the ultimate award winner will receive $50. The award winner must be

Sugar Prices September 27, 1960

Ex. Duty Raw Sugar N. Y.	6.03
Average #6 Raw Sugar Jan. 1 to Sept. 27	5.70
Refined Sugar Gross N. Y.	9.70
#4 Raw Sugar (f.o.b.) Cuba	3.25
Average #4 Sugar Jan. 1 to Sept. 27	3.10

Future Prices	*Contract #6*	*Contract #4*	*Contract #7*
Nov. 1960	5.99	...	...
Mar. 1961	5.90	3.01	6.43
May 1961	...	3.05	...

part of the U. S. sugar economy, which includes any nation supplying the U. S. market. He will be selected by the judges from those nominated. The "1960 Sugar Man of the Year" will be announced early in 1961.

Beet Results In Hawaii

HONOLULU, SEPTEMBER 28: Hawaii has harvested another beet sugar experiment and indications are that beets produce substantially more sugar per acre month than cane. While the tonnage of cane per acre in Hawaii is above 85 tons, this is a two year crop. Beets produced 28.42 tons per acre in 6.1 months.

The most recent test was made at Kekaha Sugar Co. on the Island of Kauai.

Yields were reported to be fairly good, ranging from 2.58 tons sugar per acre for the poorest yielding variety to 4.41 tons per acre for the best. The overall average sugar per acre for all varieties and plots was 3.33 tons. Some of the harvested beets weighed as much as 12½ pounds, were grown on irrigated land.

The sugar per acre figures refer to theoretical sugar based on laboratory analysis and are not reduced by a factory recovery figure. It is quite possible that factory processing would reduce the sugar per acre figures by some 20%.

Following is a comparison on the four best sugar varieties and cane sugar averages at Kekaha:

BEET VARIETY	TONS ACRE	TONS SUGAR PER ACRE	TONS SUGAR ACRE PER MONTH
S.P. 58429-01	28.42	4.41	.723
U.S. 401	23.29	3.55	.582
S.P. 55206-0	19.83	3.06	.501
U.S. 75	16.88	2.58	.423
Beet Sugar Average	21.68	3.33	.545
Kekaha Cane Sugar Avg. ('50-'59)	88.32	11.75	.498

The average continental U. S. beet weighs 1.7 pounds, averages about 17 tons of beets per acre and about 2.5 tons of sugar per acre.

Ewa Plantation Co. was the first of Hawaii's sugar plantations to complete the 1960 grinding season.

Preliminary estimates are that the crop will be approximately 44,000 tons of 96 degree raws, compared to a normal production of more than 60,000 tons. Low production continues to reflect the effect of the four-month industry-wide labor strike in 1958.

Even at 44,000 tons, Ewa's 1960 output is an improvement over its 34,899 tons in 1959 and 26,518 tons in 1958. Ewa was the hardest hit during the strike as it is located in a very dry area and depends almost entirely upon irrigation.

Pioneer Mill Co., on the Island of Maui, has started a long-range steam and power modernization program. The first phase involves:

1. The construction of a new bagasse storage house.
2. Moving the present 3,000 K.W. turbo-generator into the mill power house.
3. Developing sufficient supply of cooling water to serve the needs of the new program.

An expenditure of $276,000 has been appropriated for the first phase work. Phase two of the program will require some three years to complete. This involves the purchase of a new steam generating plant. Phase three is the installation of a large turbo-generator to supply the needs of the mill and anticipated utility requirements for the area.

A new seed cutter is being built by Hawaiian Commercial & Sugar Co. on Maui with drawings supplied by the field engineering department of the Hawaiian Sugar Planters' Association Experiment Station.

This will be a direct-mounted seed cutter in contrast to the current prototypes which are side-mounted machines. "Direct-mounted" means the engine is on the right, the operator on the left, and the conveyor assembly in the middle front of the tractor. "Side-mounted" means the conveyor is on the side of the machine.

Advantages of the new machine are: it is lighter and less expensive, and it can start cutting a field of seed cane without tramping down the first row as in the case of the side-mounted cutter.

Several plantations are awaiting results of this machine with a view to building their own, according to R. A. Duncan, the HSPA Experiment Station's chief engineer.

This will be the third seed cutter in the industry. The original seed cutter was developed by the HSPA at Kohala Sugar Co. on the Island of Hawaii. Kohala built a second machine with some added improvements.

The mechanical seed cutters have a maximum theoretical capacity of 40 tons an hour. However, the practical operating capacity is about 60 tons per eight-hour shift. A man cutting by hand cuts about four tons a day.

Seed cutting is one of the few hand operations left on Hawaii's sugar plantations.

A new Hi and Wide aqua amonia fertilizer tractor has been adapted for use as an inter-row chemical weed sprayer by Hamakua Mill Co., located on the Island of Hawaii.

The Hi and Wide machine is a lightweight crawler or wheel-type field vehicle which has been used in Hawaii for several years. The tracks, or wheels, are spread to allow the machines to travel in the furrows. The chassis is built high so as to permit the machine to travel over cane several months old without serious damage. And, the driver normally sits side-ways so that the machine is two-way. There is no turning around at the end of rows. The Hamakua machine sprays four rows of cane at one time.

The largest single shipment of raws ever to leave the Hawaiian Islands was picked up recently. Matson Navigation Co.'s freighter, California, loaded 14,429 tons of bulk sugar.

This is a modernized bulk freighter recently put into service between the Islands and west coast of continental U. S. In addition to the large cargo of raws she carried 104 containers on her decks.

A Hawaiian scientist who has returned from a world tour reports a Russian irrigation system could be of major interest to Hawaii.

Dr. Bessel D. Van't Woudt, assistant agricultural engineer at the Hawaii Agricultural Experiment Station, said Russia was still in the process of catching up with irrigation developments in other countries, but has made some conspicuous advances. One of these advances is an overhead sprinkler system. On one state farm, 50 miles south of Moscow, Dr. Van't Woudt saw nine of these units simultaneously in operation. He was told that in Uzbekistan, central Asia, 300 units are under construction, built from duraluminum. The unit is tractor-mounted, with a suspended boom 180 feet in length on each side.

He said the system was stable under windy conditions and reasonably maneuverable.

Plenary information on the Hawaiian Sugar Planters' Assn. experiments with the diffusion of sugar cane indicates that a 3½% increase in extraction may be expected by this process.

Dr. John H. Payne, principal technologist for the HSPA Experiment Station, says at present the indications are that diffusion will be considered only by companies interested in new plant installation. He says it is likely unsound to scrap existing crushers to take advantage of the benefits of diffusion in sugar cane extraction.

As the experiments progressed, which have been carried on at Kekaha Sugar Co. on the Island of Kauai for two years, it was decided to prepare cane for diffusion in two steps. First, the cane is cut into lengths of about 3 inches by a machine similar to a meat chopper. Secondly, these short pieces go through a modified vertical hammer mill.

The diffuser pilot on Kauai was operated last year from March through September, and operated about the same period this year. With the conclusion of the experiments, the plant has now been dismantled.

During the experiments on Kauai about 23,000 tons of sugar cane were processed by the diffusion method.

Cooperating with the HSPA on the project were the Kekaha Sugar Co., Silver Engineering works, Inc., Denver, Colo., Rietz Manufacturing Co., Santa Rosa, Calif., and the French Oil Mill Machinery Co., Piqua, Ohio.

Canadian Harvest Starts Oct. 10th

MONTREAL, SEPTEMBER 30—The Ontario sugar beet harvest is expected this year to be above the average for the past 10 years, but below last year's record yield of 15.17 tons an acre.

Harvesting will start October 10, it was reported at a meeting of field staff members of Canada and Dominion Sugar Co. It was reported that the 14,200-acre crop is expected to yield 14 tons an acre. The 10-year average is 12.31.

Sugar content is likely to be 15.6% or higher, as against last year's average of 13.8%.

Because of reduced acreage the company's Wallaceburg plant will not operate this year. Wallaceburg area growers will be given a special allowance for delivery to Chatham.

At the request of the Ontario Sugar Beet Growers' Marketing Board, taring (calculating of waste material) will be done only at Chatham and Wallaceburg, instead of at each receiving point.

The *Winnipeg Tribune* states it has learned a new sugar refinery financed by a large Swiss group will be built in Manitoba.

The newspaper says a company now is being formed and a study is under way to choose a location for the new plant.

"Heading the study group is John Hecht, a former official of the original Manitoba Sugar Co., Ltd., who some years ago moved to Vancouver to head a lumber company. He sold his lumber mill to Crown-Zellerbach Corporation. Hecht now is in Geneva, Switzerland."

The newspaper learned that Mr. Hecht was in Winnipeg recently where initial steps were taken for locating the new sugar refinery.

Crop Results In Puerto Rico

SAN JUAN, SEPTEMBER 28: The plantations of Sucesión Serrallés and its various subsidiaries who also own and operate central Mercedita, are now making extensive trials on the airplane applications of various forms and sources of fertilizers. These trials include the application of liquid nitrogenous fertilizers and urea in granulated form. For this purpose the Southern Water Co., the spraying firm doing the contract work, uses a Grumman Wild Cat Biplane with a capacity of 1,800 lbs. of liquid fertilizer or 1,500 lbs. of urea in granular form. It also uses a Piper PA18A for the application of liquid fertilizer, herbicides and insecticides. Each plane can treat at least 200 acres daily when weather conditions are favorable. Richard K. Giles, general field superintendent of Sucesión Serrallés, states that around 1,500 acres have been already fertilized with urea by the use of airplanes. Central Mercedita had one of the longest campaigns this year, beginning operations on January 16 and ending in August 13. For this reason the use of airplanes has been a great help in the timely application of fertilizers after such a long harvest season.

Sugar Production in Puerto Rico
Results of 1960 Crop

Sugar Central	*Tons. of Cane Ground*	*Yield in %*	*Tons. of 96° Sugar*
Guánica	841,113	10.855	91,305
Mercedita	777,840	10.135	78,836
Colose	710,125	10.140	72,007
Aguirre	640,686	10.165	65,124
Plata	532,947	9.935	52,949
Fajardo	491,789	9.723	47,819
Igualdad	419,601	10.298	43,209
Cambalache	407,274	9.350	38,081
San Vicente	412,252	9.135	37,659
Eureka	340,258	10.185	34,654
Canóvanas	299,963	11.081	33,239
Las Cañas	345,123	9.427	32,535
Junces	290,600	10.887	31,639
Lafayette	288,874	10.593	30,600
Santa Juana	287,351	10.266	29,498
Juanita	271,300	10.339	28,049
Rufina	272,459	10.103	27,527
Plazuela	274,165	9.787	26,831
Monserrate	283,771	9.288	26,358
Constancia	240,205	9.699	23,298
Roig	236,945	9.740	23,078
Machete	216,288	10.124	21,897
Cortada	226,966	9.444	21,434
Rio Llano	202,068	8.749	17,679
Cayey	157,126	10.467	16,446
El Ejemplo	153,361	9.786	15,009
Soller	136,509	9.983	13,628
San Francisco	118,453	11,096	13,144
Guamani	125,316	10.257	12,853
Totals and averages	10,000,728	10.063	1,006,385

The Department of Agriculture and Commerce informs that under the incentive payment program for the renovation of old sugarcane plantings 3,677 cane growers have already planted 15,000 acres. It is expected that by the end of the year the island will have about 60,000 acres of renovated sugarcane plantings with the improved varieties developed by the Agricultural Experiment Station and distributed by the Land Authority and several sugar mills.

San Miguel & Cía. is the local representative of a new sugarcane cutting machine, named the INCA, that has been developed in South Africa. A movie has been prepared to show the operation of this machine in Africa. So far it seems that this is the most simple cane cutting machine that has been placed in commercial operation. The machine can be adapted to the power take off of most of the conventional tractors in use in the island. Two units of this machine will be introduced for demonstration purposes during the coming campaign.

The Agricultural Experiment Station spends now about $400,000 of its budget in the sugarcane research program, this being about 25% of its total budget excluding the funds alloted for the operation of the Rum Pilot Plant and the Food Technology Laboratory. In addition both of these dependencies carry out some research on sugar and the by-products of the sugar industry. The government has made appropriations to the amount of $450,000 to enable the Land Authority to expand its program for propagating and distributing sugarcane seed from the improved varieties. During the coming months this agency will be in a position to supply to the cane growers about 50,000 tons of cane seed at the price of $10.00 per ton. An annual appropriation of $1,400,000 has been alloted to the Department of Agriculture for a pe-

(*Continued on page* 52)

An Ideal Product For Mulching

By Wm. L. Owen

THE use of weathered cane bagasse as a mulch for gardners, florists and fruit growers is a procedure that is growing in popularity with a rapidly increasing demand. Its production may eventually become an extensive industry in all countries where sugar cane is grown. The purposes to be served by any mulch are as follows: (1) To protect the roots of plants or shrubs against extreme cold, or drought. (2) To retain moisture around the root area of the plants. (3) In the case of fruit orchards to protect falling fruit from bruising on contact with the hard earth, or from dirt contamination from the ground. The qualities of a mulch that best fulfills these conditions are (1) Resistance to weathering, (2) Depth of color so as to absorb warmth from the sun, (3) A texture that permits close packing so that moisture retention from the area to which it is applied is increased, (4) A composition that will not impart toxic substances to the soil from leachings.

In order to prepare cane bagasse for mulching purposes, the following procedure is usually followed. (1) The bagasse is dried in rotary gas fired dehydrators to about 10% moisture content, in order to facilitate screening, (2) It is then screened, (3) The screenings are blown through a blow pipe to a dust collector, (4) Water is introduced into the separator saturating the bagasse which is discharged from the bottom of the separator into a screw conveyor which delivers the material on the ground. This step is necessary to hasten decomposition and the acquisition of a dark humus-like color, (5) The discharged material is pushed into a large heap by bulldozers, (6) This process takes place in Louisiana during the months of October, November, and December, and the material is weathered until January when the process of hauling it back to the factory for redrying in the dehydrators begins. It will be seen from this that the weathering process for the purpose of stabilizing the product and for imparting to it the proper depth of color requires several months, and necessitates moving it to and from the weathering heap.

Not only does the extra labor increase the cost of producing the material, but much of its weight is lost from decomposition and decay. It can readily be seen that if the material could be colored economically and at the same time stabilized with some non-toxic substance so that its final composition would meet the specifications above listed, cane bagasse might find a national usage, and result in a universal demand for it.

When this problem was presented to the Wm. L. Owen Laboratory, our first thought was to find an aniline dye that would impart the desired color without contributing any toxic material or any undesirable odor. Many tests of both brown and black dyes failed to impart the desired color, irrespective of the amount of the dye applied. Besides, even considering the intense coloring efficiency of the solution applied, the cost of the treatment was beyond the limits of economic procedure.

We next turned our attention to metallic oxides, and began testing them as a possible suitable coloring matter for bagasse mulch since they have coloring properties as well as the virtue of being non toxic to vegetation and odorless. Our first tests of these materials however, did not prove satisfactory as the cellulostic tissue of the bagasse did not take up the color even if the metallic oxides were in fairly concentrated solutions. In other words, it appeared that some mordanting substance had to be applied to promote the penetration of the color and with this in view we turned our attention to the application of a conditioning agent prior to the application of the coloring matter.

However, we did not lose sight of the fact that the cost of the chemical treatment of the bagasse must not exceed $3.00 a ton. After many tests of different proportions, we found that the following proportions of both mordant and coloring matter gave the best results and proved entirely satisfactory. The proportions and the cost were as follows:

	Lbs Per 28.9 Gallons	*Costs Cts— 100 Lbs*
Coloring	**1.16 Lbs @ 16 cts**	**18.56**
Matter Mordant	**0.56 Lbs @ 13 cts**	**7.28**
	Total	**25.84**
Volume of Solution Required Per 100 Lbs	...	**28.9 Gallons**
Volume Required When Sprayed	.....	**16.7 Gallons**
Cost of Material for One Ton	.....	**$3.00**

This cost can be considerably decreased by spraying the material on the bagasse rather than immersing the latter in the coloring solution.

Tests were made to determine the degree of retention of the treated material and it was found that the color was fast and would not bleach out even after immersing it in water for several days at a time. It was also found that weathering the treated material increased the depth of its color.

A colored impregnated bagasse as above described will save weeks of time in preparing bagasse for this purpose and will save substantial cost of handling by the weathering process now employed.

At a cost of processing of only $3.00 per ton, the application of such a process should increase the production of bagasse mulch as a popular and profitable undertaking.

■

Executive Personnel

Demand for executive employes in the sugar industry is increasing somewhat. Sugar y Azucar Personnel Service now has positions open for:

Chief Mechanical Engineer
Chief of Fabrication
Chief of Laboratory
Field Superintendent
Four Process Men in the Boiling House

Suggestions have been made for men to fill these vacancies, however, the supply of personnel with these qualifications is not large.

Following are some classifications of personnel now available for employment:

Analytical Biochemist
Sales & Service Engineer
General Manager
Technical Supervisor in Factory
Chief Engineer
Accountant
Agronomist
Fabrication Superintendent
Labor Relations Director

Sugar y Azucar Personnel Service is designed to secure executive-level personnel for sugar management. A fee is charged the sugar company, and not the employe.

Sugar companies interested in securing employes, or employes looking for a new position, are invited to write Sugar y Azucar Personnel Service, 116 South King Street, Honolulu 13, Hawaii. All inquiries are handled on a confidential basis and applicants may restrict areas in which they wish their availability to be known.

Sugar's Progress in

HUMAN RELATIONS

Roy J. Leffingwell

Check Your Waistline

Management, throughout the world, is now taking more interest in the personal weight of their executives and employes. Metropolitan Life Insurance Co. of New York, which has done a great deal of research on this subject, explains why this subject is of special concern.

If you are 20 pounds overweight, the death rate is 10% higher
If you are 25 pounds overweight, the death rate is 25% higher
If you are 50 pounds overweight, the death rate is 60% higher

This is based upon a study of several million case histories in the life insurance field.

Once it was thought that your weight should naturally increase as you grow older. Now, the experts say that what you weighed in your 20's is a good weight at any age.

Overweight is closely tied in with arteriosclerosis, hypertension and diabetes—which together are responsible for a large proportion of chronic illness, and about half the death rate. High blood pressure is also found in combination with overweight.

Many companies are now organizing health maintenance programs to battle obesity. Standard Oil Co., whose employes receive free physical examinations at regular intervals, now give detailed dietary instructions and personalized guidance to overweight employes.

What can you do about the overweight problem in your sugar organization?

For one thing, set a good example yourself. Beware of the first 10 pounds of overweight. According to a University of Southern California professor of physical education, the average adult can keep himself in condition with only 20 minutes of exercise per week—providing this is done in two 10-minutes sessions and he exercises the right muscles. Recommended is a vigorous warm up exercise, such as running in place, followed by neck stretching exercises; abdominal exercises (raise legs while laying flat on the floor, and arm and shoulder exercises (pushups). He says bending over and touching the toes—a very popular exercise—does more harm than good. It stretches back muscles already over-stretched from sitting down.

If you don't know what your weight should be, look over the following chart which has recently been developed by Metropolitan Life Insurance Co.

RECOMMENDED WEIGHTS FOR MEN — AGE 25 AND ABOVE

Height	Small Frame	Medium Frame	Large Frame
5'4"	118-126	124-136	132-148
5'5"	121-129	127-139	135-152
5'6"	124-133	130-143	138-156
5'7"	128-137	134-147	142-161
5'8"	132-141	138-152	147-166
5'9"	136-145	142-156	151-170
5'10"	140-150	146-160	155-174
5'11"	144-154	150-165	159-179
6'	148-158	154-170	164-184
6'1"	152-162	158-175	168-189
6'2"	156-167	162-180	173-194
6'3"	160-171	167-185	178-199
6'4"	164-175	172-190	182-204

An August 1959 survey by the U. S. Bureau of Labor Statistics shows that the average Soviet citizen works longer today to buy his essential needs than he did in 1928.

Secretary of Labor, James P. Mitchell, in releasing results of the report, commented that the Russian workers toiled about eight percent longer last August than he did in April 1928—the year that marked the high point in Soviet level of living—to pay for a week's supply of staple foods, such as bread, potatoes, beef, butter, eggs, milk and sugar.

The Russian citizen labored 190% longer for eggs; 153% longer for milk; and about 10% longer for sugar and about 18% longer for bread.

Beef, on the other hand, was as cheap last August as in 1928, while potatoes and butter were slightly cheaper.

Compared with the American worker, the average Russian works 21 times as long for sugar, nine times as long for butter, eight times as long for eggs, four times as long for beef and milk, 3.5 times as long for potatoes and 1½ times as long for bread.

The highly successful manager of Minute Maid Corporation told Sales Executives Club members of New York what he thought the qualities of a good manager were. He admits that no one man probably possesses all qualities in full, but successful managers have a good share of the following:

1) Creative ability — a manager should be a man who thinks. Ideas are the vital spark in successful management.

2) Judgement — a manager should be a man who can make sound and wise decisions. Brilliant ideas can be downright dangerous unless tempered with good judgement.

3) Administrative skill — a manager should be a man who can plan ahead — forecast needs for men, money, materials and machines, then translate those plans into a practical effective program of operation.

4) Positive attitudes — a manager should be a man who functions constructively and with enthusiasm. Business needs leaders who can inspire their people. A worried looking boss can touch off a wave of fear rolling through the organization.

5) Faith — a manager should be a man who has faith in people and himself.

6) Courage — a manager should be a man of courage, willing to take calculated risks. In nearly every business decision one person must have the courage to take positive action without having at hand all the facts necessary to making a risk-free decision. Lack of courage has caused many managers to play into the hands of more courageous competitors.

7) Character — a manager should be a man of high integrity. On this, there can be no compromise. There is no room at the top for the man lacking in character.

SUGAR ABSTRACTS

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SUGAR y AZÚCAR — Dr. O. W. Willcox, Editor

Technology

Sugar Extraction with a Screw Press

S. G. SMART AND ASSOCIATES, *International Sugar Journal, 1959, pp. 205-206*

In a South African sugar factory an investigation was begun on the use of a machine for dewatering cane bagasse by pressing it in a reducing-screw press which rotates inside a cylindrical cage in which there are perforations for the escape of liquid. Inside the press an increasingly high pressure is maintained for some seconds, thus allowing the dilute juice to be squeezed out. During the trials the moisture content of the bagasse coming from the last mill of a tandem was 51%, which was reduced by the press to about 43%; the sugar content of the bagasse, which was 2% was reduced to about 1.6%. The juice purity averaged about 78. When some water was added to the bagasse before it was fed to the screw press, the sugar in the bagasse could be further decreased without increasing the moisture content of the final product. On the whole, the increase of milling extraction was 1.5 to 2.0%.

From this investigation it is conceived that with further improvement in the screw press it could replace the conventional milling train. In a tandem composed of such presses the maceration water would be thoroughly mixed into the bagasse as it enters the next unit. The result would be a reduction in the number of units required for a given extraction in a factory processing 1,000 to 2,500 tons of cane per day. There would be also a considerable saving in power and in investment costs. It is calculated that a 2,500-ton factory with a present milling efficiency even of 95% could increase its sugar output by 500 tons in a 100-day season.

■

Low Grade Crystallization and Sugar Recovery

Sugar Research Institute, Mackay Technical Report No. 46 (1958)

In crystallization experiments with C massecuites at a selection of Queensland mills, a miniature crystallizer was designed and built. Procedure was to hold the massecuite in the crystallizer at pan temperature until crystallization was complete; then cooled through about 35°F. and hold at the new temperature until no further purity drop of the mother liquor. Samples of molasses were obtained at intervals by means of a pressure filter to follow the course of crystallization by pol and brix determinations. Finally the massecuite was reheated to simulate factory operation, with further sampling to determine degree of re-solution of crystal. Supersaturation of molasses at pan drop was usually in the range of 1.10-1.20; it was found that cooling through 35°F. in a period of 2 hours did not cause false grain to form; on the average, true purity of molasses was reduced by 1 unit for each 6-8°F. of cooling, and it was concluded that under present factory conditions, the only factor limiting practical exhaustion of final molasses is viscosity. A value of 1,000 poises has been chosen as a reasonably high value for exhausted molasses, and for efficient work at the fugal station, this should be reduced to about 500 by reheating the massecuite prior to curing. This normally involved reheating through 13°F. The speed of reheating is most important, and provided delays are avoided, the purity does not exceed 1 unit. Final true purities at the target viscosity varied with factory, ranging from 36 to 46. The effect of insoluble suspended solids in final molasses was found to have a profound effect on viscosity; removal of 5% of sludge from one molasses reduced the viscosity by almost one half.

■

Deterioration of Sugar Cane Molasses in Storage

J. M. SAHA AND ASSOCIATES, *Indian Sugar, Vol. 8, No. 12, pp. 737-767 (1959)*

Molasses as received from a sugar factory working by the double sulfitation process was stored in February in a steel tank 38 ft. in diameter and 20 ft. high, capable of holding about 490 tons of molasses. Within the tank were placed draw-off tubes so that samples could be taken at eight levels at different distances from the walls. Each months' samples were taken from each level and analyzed. The operation covered ten months, the temperature of the molasses at each level at withdrawal was measured.

Active deterioration of the molasses began with July and became quite rapid during the monsoon period in respect of Brix, dry substance, pol, sucrose, gravity and true purity, fermentable sugars, color and glucose/ash ratio. The deterioration starts at the top layer and in that region it is maximum at any period; the action gradually travels downward with decreasing intensity and is minimum at the bottom region. The temperature, during storage is about 105°F. in April and dropped to 87.13° in November. At first there was some frothing and rise in temperature in the top layer, but it subsided later.

The principal economic effect of such deterioration appears to be the large increase in the reducing sugar/ash ratio, which would mean a loss of fermentable sugar and consequently a loss of alcohol obtained by fermentation. For the ten-month period of these experiments it is calculated that the loss of alcohol would be about 13% of the entire quantity of molasses; the loss in the top layer would amount to about 50%.

A New Idea in Desugaring Sugar Factory Muds

R. GOTTSCHALK, *Zucker, Vol. 12, No. 13, pp. 301-305 (1959)*

At the Emmerthal beet sugar factory in Germany the clarified juice is limed and carbonated and then passed continuously into the upper space of a main settling tank; from the bottom of this settling tank the sludge is passed successively through a series of smaller settling tanks against a counter-current of fresh water. The arrangement is very much like that of an ordinary beet diffusion battery in which the sliced beets are passed through a series of diffuser cells against a counter-current of water which washes out the sugar.

The result of this new system is that the mud is completely desugared to 0.1 pol in the settling tanks and is obtained in the form of a highly concentrated sludge (about 20 kg. of solids in 70 liters of water), which is dewatered in filter presses. During this counter-current washing of the mud, the original juice becomes diluted by about 8% on beets, which gives a final clarified thin juice amounting to .137% on beets, about the same as in the ordinary process. The purity of this juice is 92.5%. The lime content (hardness) of the juice is 3° to 4° less than in the common process. There is no increase in the ratio of color in the thick juice. The principal advantage of this system, aside from its continuity, is that it does away with the rotary filters at a considerable saving in both operation and investment costs. For a 2,000 ton factory the cost of a complete rotary filter plant is 350,000 DM and its power consumption is about 100 KW, while the new system costs 220,000 DM and the power consumption is 20-25 KW.

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The Quentin Ion Exchange Method in European Beet Sugar Factories

F. SCHNEIDER, *Zucker, Vol. 12, No. 14, pp. 331-332 (1959)*

In recent times German factories have been making increased use of ion-exchange by the Quentin method to reduce the purity of final molasses. In this method potassium is exchanged for magnesium. This accumulation of magnesium in the molasses lowers the solubility of sucrose to such an extent that the purity quotient of the molasses is lowered by four units. The increased yield of sugar amounts to 2.0-2.5% on beets, and the end-molasses is still salable under the prevailing trade specifications. The process has to be strictly controlled in order to obtain the desired magnesium content in the molasses and this is accomplished through a system of pumps and valves which are actuated automatically by variations in electrolytic conductivity. This control system (developed by the firm of von Dolffs and Helle) is simple and inexpensive. In Austria a similar scheme is used, consisting of exchanging the alkaline salts of the juice for ammonia, which is then replaced by calcium which reduces the solubility of sugar, resulting in increased yields of sugar amounting to 0.5-0.6% on beets: the molasses then has a purity quotient of 50. There are no restrictions on the sale of low purity molasses in Austria.

■

The Assalini—B-Process, A New Method for Desugaring Molasses

HUBERT SCHIWECK, *Zucker, Vol. 12, No. 21, pp. 502-508 (1959)*

This process is a special form of ion-exchange which depends more on the specific physical characters on the exchange resin than on the general laws of ion-exchange principle. In its practical form it makes simultaneous use of two exchangers of equal capacities. One is filled with cation resin XE-200, and the other with the anion resin IRA-401-S. On account of their different natures these resins react with the passing molasses solution in different manners. The cation exchanger exercises what is called the "Neutral absorption effect" or Donnen effect. The anion exchanger displays the "electrolyte-forerun" (Wheaton-Bauman effect). Also involved is the "ion exclusion" principle which makes a rapid separation of the salts and the neutral substances, and virtually prevents the inversion of sucrose in the operation. As operated in a beet sugar factory there is a recovery of 1.1% sugar on beets compared with 0.3 to 0.7% on beets by other ion-exchange precesses. The commercial value of the final residual molasses is not impaired.

■

Tests with Hydrocylones for Second Carbonation Juice

O.ASP, *Communication from the Swedish Sugar Corp. Series II, No. 4, (1959)*

At the Skivark factory in 1958 a battery of five hydrocyclones was installed for separating the sludge in the second carbonation. These hydrocyclones are of a special type manufactured in Stockholm under license from Nichols-Freeman in U.S.A. and have performed very satisfactorily. This type of hydrocyclone consists of an upper cylinder and a lower cone with a relatively wide angle. Within the top of the main cylinder there is a short cylinder extending part of the way down. The liquid enters tangentially at the top under high pressure so that the whole liquid content rotates at high speed. The outlet is also at the top but the inner cylinder prevents mixing of the purified juices and the thickened sludge subsides and passes out at the bottom. The effectiveness of the system is such that there remains very little solid matter to encrust pipes and heating surfaces. Each of the five hydrocyclones carries a load of 410 liters per minute. Four fifths of the sludge is returned to the second carbonation and the other fifth to the first thickener. The sedimentation velocity is 280 times that of a thickener working by gravity alone. The retention time of the juice in the cylinder is about two seconds.

■

Removal of Suspended Solids from Mixed Juice by a Dorr Cyclone

P. C. WRIGHT, *Proceedings Queensland Society Sugar Cane Technologists Vol. 26, pp. 177-182 (1959)*

In a series of full scale tests it was found that a six-inch hydrocyclone operating on mixed juice at 20 p.s.g.i. feed pressure was capable of handling 60 gallons per minute and extracting above 90% of the sand coarser than 150 mesh, or 50% of the total sand. The underflow amounting to about 1% of the total juice, is passed into a 4 ft. x 5 ft. settling cone (150 gals. capacity) from where the sand is removed and washed free of sugar. As a general rule, sand coarser than 250 mesh is efficiently extracted while the finer particles remain in the overflow. However, it is emphasized that the most troublesome material in the factory is the + 150 mesh sand, and 90% of this is removed.

In a factory crushing 150 t/hr a bank of 106-inch units would be required to handle all the mixed juice; alternatively, a set of three 12-inch units (which cost only half as much as six units) would suffice, although the extraction of sand would

be less. However, these larger units do remove material down to 200 mesh, and considering the difference in the first cost and maintenance, it seems that the larger units should be preferred on an economic basis.

■

The Hydraulically Loaded Mill

Sugar Research Institute, Technical Report No. 55 (1958)

This report records the results of comparative tests with the experimental mill, first with a fixed top roll, and then with the top roll hydraulically loaded. Where periodical variations occur in crushing rate, the hydraulically loaded mill is more effective in controlling juice extraction, and is considered superior to the Killer-plate control on engine speed. It is important, to obtain best performance, that the applied load be such that the roll moves freely, and results indicate that a load of 50 tons/ft. of commercial mill roll should maintain high levels of pol extraction. Coarse preparation required somewhat more load than fine for equal extractions. Mill ratio need not exceed 2 : 1 provided the mill is feeding properly: changes in ratio due to top roll movement need not cause large changes in extraction, if the ratio is sufficiently low.

■

Agriculture

An Effective Inter-row Spray Unit

J. BARNARD. *27th Conference Queensland Society Sugar Cane Technologists, pp. 55-57 (1959)*

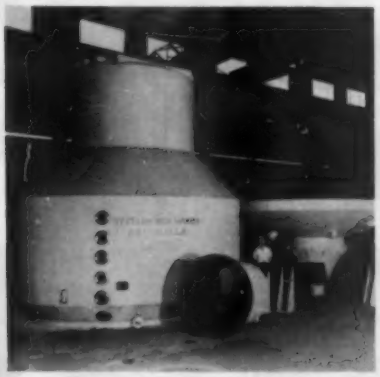
In some cases a problem of troublesome weed growth may arise in cane fields approximately 10 to 12 weeks after the last practicable inter-row cultivation. At this time the crop has about five or six feet of cane showing, and has not yet provided a canopy of leaves dense enough to exclude sunlight and thus smother the new weed growth which has arisen despite a pre-emergent spray applied immediately following the last cultivation. One way to meet this condition is to send in men carrying knapsacks from which they pump herbicides, but in hot weather this is a slow and exhausting operation. These difficulties led to the invention of a low-slung wheeled vehicle 30 inches wide and driven by a seven hp. motor. The vehicle provided the driver with a comfortable seat and carries a 15 gallon tank and pump for the herbicide solution, which is discharged to the rear. A simple protective guard shields the driver from leaning stalks and leaves. Operations with this machine are said to be very successful. Details of construction are given in the test.

■

B H C for Wireworm Control

R. W. MONTGOMERY. *Cane Growers' Quarterly Bulletin, Vol. 23 p. 65 (1959)*

It was found that germinating cane can be protected against wireworms by applying 10 lb. of 20% BHC per acre in the furrow. This small amount is difficult to apply, so the dust was mixed with 326 pounds of fertilizer. Since high concentrations of crude BHC affect root growth adversely, it was recommended that care should be taken to keep this chemical from immediate contact with the setts, but not to have it placed more than about an inch away from them, otherwise wireworm control might be impaired. Correct placement was effected by means of various attachments to the delivery tube from the



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fertilizer distributor on the cutter-planter, and these modifications allowed a small quantity of soil to run in before the BHC-fertilizer mixture fell on top of the setts. This thin layer of soil protected the sett from injury by the BHC-fertilizer mixture, yet it allowed the insecticide to exert its full measure of protection against wireworms.

■

The Massey Ferguson Cane Harvester Makes History in Australia

ROY DICKSON, *Producers, Review, Vol. 49, No. 11, pp. 7, 11 (1959)*

The new Massey Ferguson harvester, which is designed to cut and top the cane and chop up the stalks into small lengths, was put to work on a contract to cut about 7,000 tons of cane in the Herbert River district. At last accounts the machine was cutting cane at the rate of 538 tons a week in an average daily period of 7 to 8 hours. The "Operation Chop Up" has been an outstanding success, and it is claimed that the manufacturers have given the sugar cane industry what it has long been seeking—efficient cane harvester, which can cut cane even when it is a tangled mass lying on the ground.

■

Ratoon Stunting Disease in Java; Effect of Long Hot Water Treatment on Germination

HAN LIOE HONG. *Report Experiment Station Java Sugar Industry, 1960, No. 1*

The ratoon stunting disease has been known in Java since 1954, but is not easy to find and apparently exists in a relatively mild form. Comparative field tests over a two-year period show that losses may range from three to eleven percent. The disease is readily controlled by the long hot water treatment (two hours at 50° C.) but this treatment in general causes the lateral buds of treated seed pieces to become soft, tender and easily damaged even under careful handling, which results in reduced stand counts in the field.

An investigation was made of the reaction of different buds of cane stalks of different ages to the long hot water treatment. These investigations led to the conclusion that cane which is to undergo the treatment should be older than eight months for POJ 3016 and not younger than seven months for POJ 3067. In Java three seed pieces are cut from the top of the stalk, each containing two or three buds; the No. 2 seed piece (eyes three and four) are the most resistant to hot water.

■

Books

The Gilmore Puerto Rico-Dominican Republic Sugar Manual

Published 1958 by Gilmore Publishing Co., New Orleans, Vol. 16:188 pages, $10.00

This edition of Gilmore Manual covers all sugar factories in Puerto Rico, Dominican Republic, Haiti and the Virgin Islands. As in preceding volumes, each factory is described with information on its ownership, its managing and technical personnel, and information about its agricultural operations. There are tables of data on the manufacturing results in 1957 and 1958 and other statistical information. Maps show the location of the factories in

Puerto Rico and Dominican Republic. A buyers' guide lists sources of supply of machinery and other services relating to the sugar industry.

■

F. O. Licht's International Sugar Economic Yearbook and Directory 1958-1959

Published by F. O. Licht K. G. Ratzburg, Germany, 396 pages 8" x 12"

This large book gives a comprehensive account of the West German sugar industry, both agricultural and technological, along with a summary of German sugar legislation and the laws of trade. Lists are given of sugar factories, their addresses and owners in all sugar producing countries in the world. The section on world sugar statistics, embracing production, consumption, exports and imports, edited by Dr. Hugo Ahlfeld, is as usual quite extensive. A section of 63 pages is devoted to a description of the equipment and accessory appliances produced by the German machinery industry.

■

Basic Calculations for the Cane Sugar Factory

J. EISNER, *Published by Booker Bros., McConnell Co, London E.C.4 24 pages $1.00*

This small but excellent manual admirably condenses the calculation procedures in cane sugar factories by beginner technicians who are put in charge of routine operations. The subject is covered in eleven chapters which refer to the following topics: Juice extraction at the mills; Liming of juices; Clarified juice and syrup; Output of commercial sugar and molasses; Amounts of massecuites by different boiling systems; Steam requirement; Consumption of steam and power; Steam generation; Heating surfaces of boilers, heaters and evaporators; Condensers; Available heat in bagasse. The presentation of these subjects is very clear and readily understandable. Even graduate engineers may find it useful for ready reference.

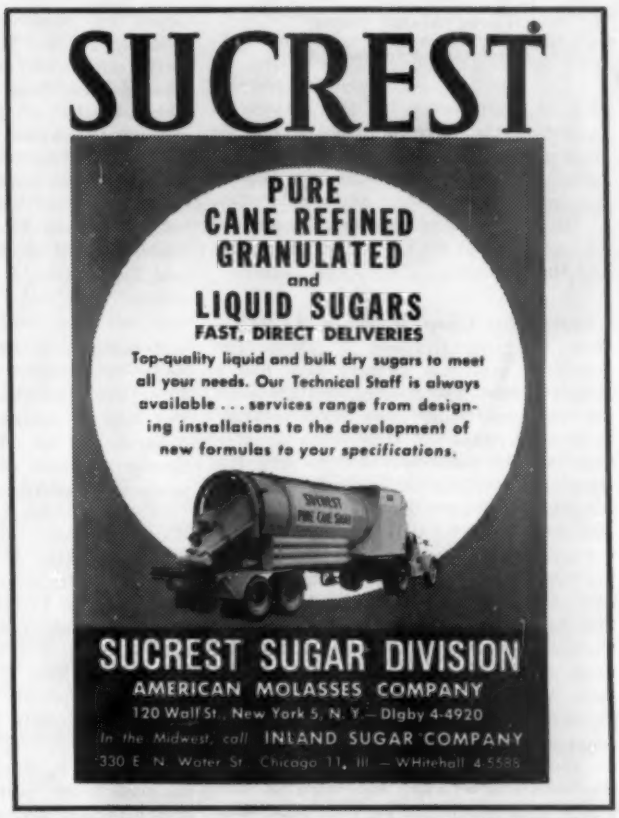
■

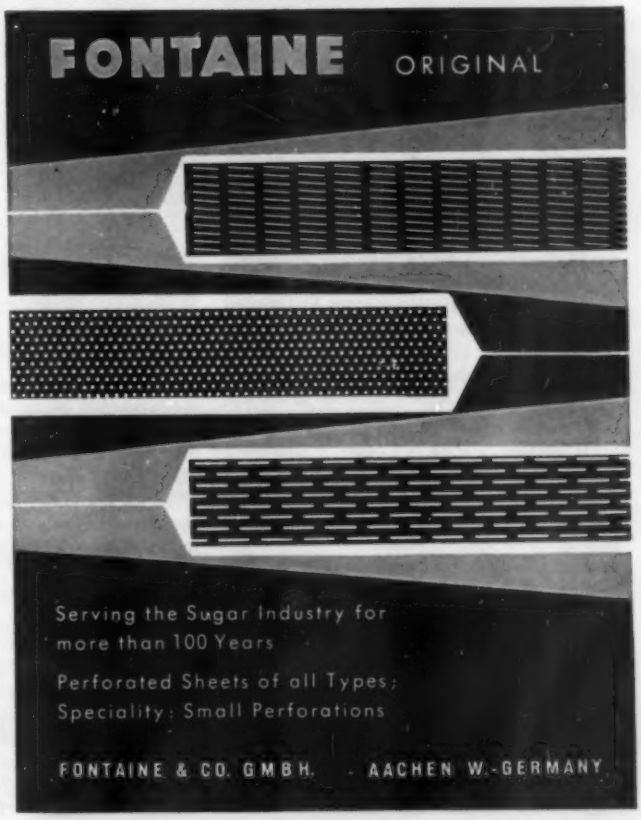
Manual Azucarero Mexicano (Mexican Sugar Manual)

2nd edition, published by Cia Editaria del Manual Azucarero, S.A., Balderas 4, Mexico, D.F. 360 Text pages 8" x 11" with map $6.00

This recent addition to the list of regional sugar yearbooks is a handsome volume containing lengthy descriptions of each of the 74 mills in the country. The executive personnels are listed and full descriptions of equipment used in agriculture and in the factories are given. A colored map shows the distribution of the factories. The capacities of these mills range from less than a thousand tons of sugar per year up to 166,000 tons. Total production in 1958 was 1,122,943 tons.

Besides the factory data there is given an account of the various organizations pertaining to the industry: National Union of Sugar Producers, the National Society of Alcohol Producers, the National Financing Institute of the Sugar Industry, the Syndicate for Improvement of the Sugar Cane, the Syndicate of Workers in the Sugar Industry and the Federation of Cane Growers. An appendix provides 20 pages of tables and graphs useful to sugar technicians. Naturally, the book is printed in Spanish.





Facts About Sugar

(*Continued from page* 44)

riod of three years for the purpose of expanding the incentive program for the renovation of the sugarcane plantings. An initial appropriation has been approved for the amount of $10,000 for drawing the plans of the new sugar technology laboratory to be established at the College of Agriculture and Mechanic Arts.

Louisiana Crop Increase 11.9%

New Orleans, October 3, 1960: The Louisiana sugarcane farmers have had a month of excellent planting weather since our last report and these operations are practically completed. It is encouraging to note that the canes harvested for planting have been yielding satisfactorily and that planting ratios have been about up to normal. This indicates that the yield of cane per acre should be satisfactory when harvesting operations begin. It is noted, however, that sucrose tests at this time are considerably below normal and it is a sure bet that grinding operations will begin later than usual due to the green condition of the cane. A late start will, of course, increase the freeze hazards in all sections of the sugar belt. The latest U.S.D.A. estimate of the crop indicates a yield per acre of 22 tons compared with 20.3 tons last year, and a total cane production for both sugar and seed of 6,292,000 tons compared with 5,520,000 tons produced in 1959.

While on the subject of the crop, Gilbert J. Durbin, General Manager of the American Sugar Cane League, has stated that there are indications that some herbicides may do a year-round job of grass and weed control following one application in the fall. It also appears that the chemicals will be more effective if mixed with the soil. They do not have to be sprayed on the grass and weeds. These herbicides remain in the soil and kill the grass and weed seedlings after they germinate. Fortunately, the new herbicides which appear to do the best job on killing grass and weeds in cane fields apparently do not harm the cane.

"If further testing confirms preliminary results from these chemicals, Louisiana's sugar cane production will be increased in two ways," Mr. Durbin stated. "Yields per acre of cane will increase," he said, "and acreage of cane will increase. The explanation for this is that at present Louisiana cane acreage is used for only two or three years and then fallow plowed to get rid of the grass and weeds. If these could be kept under control while the fields are in cane, four or more cane crops could be harvested from one planting."

The Annual Meeting of the American Sugar Cane League was held in New Orleans on September 29th and Warren Harang, Jr. was elected President of the organization for another year. Also reelected were Messrs. Ed. Schexnayder of White Castle, La., 1st Vice-President, T. M. Barker of Lockport, La., 2nd Vice-President, Andrew P. Gay of Plaquemine, La., 3rd Vice-President, Josiah Ferris of Washington, D. C., 4th Vice-President, Gilbert J. Durbin of New Orleans, La., 5th Vice-President, F. Evans Farwell of New Orleans, Treasurer, and J. J. Shaffer, Jr. of Houma, La., Secretary.

A luncheon sponsored by the American Sugar Cane League and the Louisiana State University Agricultural Extension Service was held in conjunction with the Annual Meeting of the American Sugar Cane League to honor cane farmers who have produced the highest cane yields from the 1959 crop. Josiah Ferris, Manager of the Washington office of the League, was the featured speaker at this luncheon. In his talk Mr. Ferris pointed out that despite the fact that the Louisiana industry has reduced the number of man hours of labor required to produce a ton of sugarcane by nearly 60% since 1948 and has also increased the production of sugarcane per acre approximately one-third, the governmental policy of keeping the domestic sugar industry in a strait jacket—pricewise—has made it impossible for the average farmer to make any money producing sugarcane. Mr. Ferris said that the domestic sugar industry deserves much better treatment than it has received under the Sugar Act and indicated that he expected the next session of Congress to pass sugar legislation more favorable to the domestic producers.

The Sugar Division of the U.S.D.A. has announced that the 1960-61 Louisiana Pricing Period will begin on October 7, 1960 and run through January 26, 1961 for raw sugar and through April 27, 1961 for blackstrap molasses. This is a period of sixteen weeks for sugar and twenty-nine weeks for blackstrap. Both periods are the same as those used last season.

The Louisiana Sugar Exchange has announced that its rules governing quotations on blackstrap molasses will be unchanged this season, but that the rules governing quotations on raw sugar, delivered New Orleans, have been adjusted to comply with the change in sugar supplies brought about by the Cuban situation.

Brazil Expands Foreign Sales

Rio de Janeiro, September 23: During the first seven months of 1960 Brazil produced 1,207,800 short tons of *usina* sugar, which added to 1,385,148 tons carried over from the previous year brought total availabilities up to 2,592,949; 1,531,200 t. were absorbed by the domestic market and 495,000 exported, leaving 566,749 tons on hand at August 1st. Domestic consumption has averaged 218,742 tons monthly this year and, if maintained at the same rate until the end of December, will set up a new record of 2,625,000 tons.

In July the Department of Foreign Trade (CACEX) opened proposals for sales in foreign markets. Through September 184,553 tons had been sold in export including 100,000 tons to the United States.

Commencing early August arrangements were made for 10,000 bags of sugar (660 short tons) to reach Brazil's shipping ports daily. The first consignment of 10,780 tons left Santos for U.S.A. at the month's end and was to be followed by others in quick succession from Rio, Santos and Recife, so as to complete the shipments by September 30. In August and September two lots of 12,000 litres of alcohol, acquired by *Union Carbide*, also left Santos for U.S.A.

Although, compared with the corresponding period of 1959, production was cut by 170,299 tons in 1960, while consumption and exports increased by 187,949 and 68,157 tons, respectively, the accumulation of large stocks at the end of each season, despite restricted production, provokes dissatisfaction. Towards mid-September Ignacio Tosta Filho, Director of CACEX, told Paulistas in answer to enquiries that Brazil's exportable surplus should reach 891,000 tons in the 1960-61 season. In the circumstances, he said, there would be ample margin for Sao Paulo to export another 300,000 metric tons to U.S.A. To facilitate the transaction it was proposed to accept part payment in American wheat. Negotiations were recently opened to renew the contract under which Brazil acquires 1,800,000 tons of American surplus wheat stocks, spread over three years.

The Sao Paulo Syndicate issued a statement to the effect that the measure would not affect the domestic market, either as regards supplies or prices, as Sao Paulo would only export the surplus, which would otherwise remain on the ground in the form of *blocked* cane. It was also pointed out that the domestic market is amply provided for under the Institute's new system of control. Thus the 1960-61 Plan reserves 2,749,484 short tons for home consumption. Moreover, for domestic consumption the mills produce almost exclusively crystal sugar, which is delivered to the refineries for final processing and distribution to commerce. On the other hand the bulk of the sugar exported is demerara, for which processing is completed by the importing country. Of the 678,282 tons sold abroad in 1959, 531,518 tons consisted of demerara, 146,171 of crystal and the remainder of *mascavo*.

The recent investigations of the Food and Agricultural Organization of the United Nations have aroused considerable interest in Brazil. The F.A.O. researchers conclude that world consumption of sugar will reach 57 million tons in 1965 and 67 millions in 1970, i.e. 30 and 50% more than in 1958.

If these forecasts are realized Brazil, having large areas available for further planting and a rapidly-growing population, is excellently placed to increase her participation in world markets.

"Celubagaco," manufacturer of paper from cane bagasse at Campos, has filed a petition in bankruptcy. The Brazilian Bank for Economic Development is responsible for re-payment of the loan of U. S. $2,700,000, granted by American Overseas Finance Corp., and for a local loan of 19,600,000 cruzeiros, both of which it guaranteed. Celubagaco's project provided for an annual outturn of 20,000 tons of cellulose, starting in 1958, but the company fell into difficulties in 1959. Another similar factory, belonging to "Cellulose Fluminense" is operating in Campos.

■

India Plans for More Sugar

The Development Council for the Sugar Industry of India has recommended a consumption target of three million tons for the Third 5-Year Plan, which would make available a per capita consumption of 13.87 lbs. of sugar in 1965-70 as against 11.70 lbs. at the end of the Second Plan. In presenting the new plan Shri Ameer Raza, the Council's Chairman, said that the production of sugar had gone up to about 2.7 million tons during the current season up to February 7. The area under cane was also estimated to be higher than last year, being 5.1 million acres against 4.7 million acres in 1958-59, which could mean a considerable improvement in the overall sugar position. Among the steps taken by the Government to increase production was raising the price paid to the farmers for cane by 12.5%, along with some tax relief to the factories. Still, the year that had gone by was a difficult one for the sugar industry because, to conserve the surplus for internal consumption, the program of exports had to be suspended for the time being. However, the results of the new incentives have been good, and the production has recently gone up.

Regarding progress in the establishment of the additional capacity, Shri Raza said that 27 new factories had gone into production and 28 existing ones had completed expansion for the 1958-59 season covering a total of about 4.53 million tons of grinding capacity. About 50,000 tons of new capacity is due to expansion of some of the units.

Thus far this year, four new factories have gone into production and two were expected to have a trial run this season. It is hoped that during 1960-61, another 11 new factories will go into production.

■

Donald Luke Heads Suchar Company

Donald K. Luke, Sr. has been elected president of Suchar Sales Corporation and its affiliated company, Fas-Flo Filter Corporation. Mr. Luke, former vice president of both companies, succeeds J. W. Stafford who has retired. A. R. Dominguez will become vice president of Suchar and Fas-Flo. Suchar Sales Corporation is well-known in the international sugar industry as a supplier of a special activated carbon; the affiliated company produces a widely used filter for the cane sugar mill.

■

Greece To Build Three Beet Factories

A move to establish a strong sugar beet industry in Greece has been assured by an agreement between the Greek Government and the Agricultural Bank of Greece, who have joined to set up a commercial corporation called "The Hellenic Sugar Industry." Under the terms of the agreement three sugar factories are to be erected, each with a capacity to produce 28,000 tons of sugar per annum. Taking into consideration that cultivation will be carried out on rotation system, this means that the total area required for growing sugar beets will cover a total area of about 28,000 to 32,000 hectares of farm land.

Preparations for the erection of one of these factories at Larisa are now well under way and it is expected that the corner stone will be laid during the present summer, and the factory will start operating toward the end of August 1961. The Thessaloniki and the Serrai factories are expected to start operating within the next two or three years.

■

Sugar Surplus In Swaziland

As a result of the two preceding good crops and the opening of two new sugar mills in Swaziland, the sugar industry of South Africa faced a surplus of 200,000 tons of sugar for which it has no outlet. As announced in the *Government Gazette*, the Minister of Agriculture and planters have agreed to restrict the 1960-61 crop to a total of 940,000 tons by reducing indivdual producer's delivery quota by 25% until the export surplus can be worked off. In the meantime, no new sugar quotas will be issued to newcomers to the industry.

■

Gruendler Cane Trash Distintegrator

A new cane trash distintegrator that operates in the field at harvest is described in a recently issued brochure produced by the Gruendler Crusher & Pulverizer Company of St. Louis. The disintegrator is drawn by a tractor and is fed by a single worker; cane trash is drawn into the machine and the fragments are forcibly blown out through an overhead flue and scattered on the ground. The unit is mounted on a steel frame and is provided with four pneumatic tires. A power unit can be supplied with the machine or it can be driven by power take-off from the tractor. The disintegrated cane trash can be plowed into the soil providing soil conditioning material; it eliminates the need for burning trash or the use of heavy plowing.

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Sugar and fermentation technologist, 5 years experience, liquid and granulated sugar, bakers' yeast, vodka, gin, quality control, purchasing, product development, perfect English and German, age 37, immediately available.

Write to Box #814, Sugar y Azucar, 604 5th Ave., New York 20, N. Y.

POSITION WANTED

Chemical Engineer, Superintendent of Manufacturing, age 38, single, with many years of experience in Latin America. Raw and refined beet and cane sugar, fermentation of molasses and distilling alcohols. Speak English and Spanish fluently. Write Box #815, Sugar y Azucar, 604 Fifth Avenue, New York 20, N. Y.

POSITION WANTED

M.Sc. (Agri.) experienced over 20 years in Sugarcane cultivation in all its aspects. Worked in various capacities in the large factory owned sugarcane plantations. Seeks a suitable job in large sugarcane plantation as Plantation Manager. Write Sugar y Azucar, Box #818, 604—5th Ave., New York 20, N. Y.

POSITION WANTED

Management Engineer. 10 yrs. exp. Cuban Sugar Industry. Manager of 3,750 ton mill, refinery and plantations for 6 yrs. Broad experience in all phases of factory and field management. Available on short notice. Seeks position in any area. 37 yrs., U. S. citizen, married. Write "Sugar y Azucar" Box # 817, 604 Fifth Ave., New York 20, N. Y.

POSITION WANTED

Agriculturist, Manager, excellent references. Wide experience Hawaii and Cuba, administrative and field management, cane research, cane haul, fertilizer, irrigation harvesting, spraying, borer and weed control methods. Available for any area. Age 50, U. S. Citizen, married. Write, Box #819, Sugar y Azucar, 604 Fifth Ave., New York 20, N. Y.

POSITION WANTED

Manager-Engineer, 19 years experience in the Cuban Sugar Industry. Seeks position in any area. Age 40, married, perfect English and Spanish educated in U.S.A. Available immediately. Highest recommendations. Write Box #820, Sugar y Azucar, 604 Fifth Ave., New York 20, N. Y.

Lynn U. Stambaugh of the Export-Import Bank signs documents for financing the purchase of the Farrel tandem while, left to right standing, Abraham Cornejo Isasmendi, counsel for the customer, Franklin R. Hoadley of Farrel-Birmingham and Dr. Enrique Patron Costas, president of Tabacal, look on.

Six Thousand Ton Tandem To Argentina

A six-mill turbine-driven tandem with the unusual capacity to grind 6,000 metric tons of cane per day has been ordered by Ingenio y Refineria San Martin del Tabacal, S. A. for their cane factory in the province of Oran, Argentina. The order was placed with Farrel-Birmingham Company of Ansonia, Connecticut. The tandem consists of six mills with 38 by 84 inch rolls each individually driven by steam turbines having a maximum of 1,000 HP at 5,000 RPM. Mills are driven through Farrel's high speed double reduction gears with the new low speed, totally enclosed double reduction gear units. An air clutch is used in place of the conventional flexible coupling. Long-term financing is being provided by the Export-Import Bank, Washington, D. C. with Farrel participating. Installation of the tandem is part of Tabacal's modernization program.

■

Zuckerwirtschaftliches Taschenbuch 1960

Though small in size, this sugar trade pocket book published by Verlag Dr. Albert Bartens gives extensive statistical and other information on the world's sugar statistics. It covers figures on production, consumption, imports and exports by countries. The structure of the German sugar industry is described in detail. (184 pages, 4¼ x 6 inches: F. A. Gunther & Sohn, A-G., Berlin SW 61)

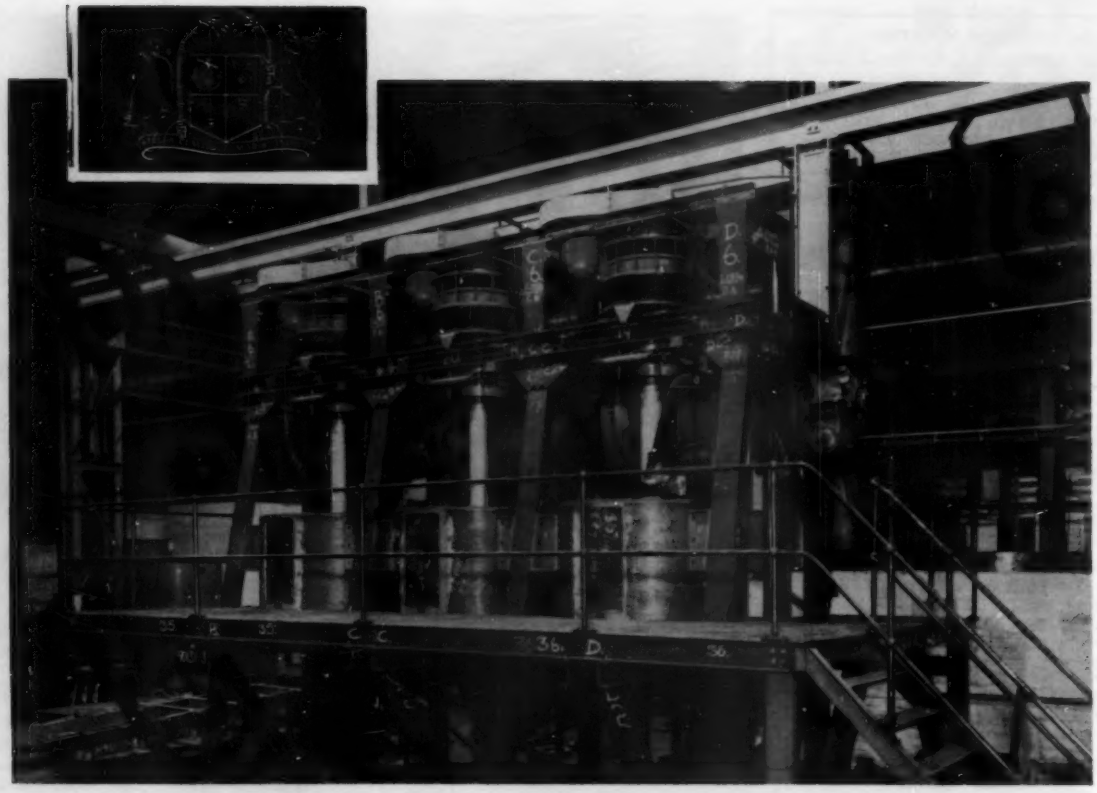
■

Large Bagasse-Paper Mill For India

A paper mill for the production of newsprint having a capacity of 60,000 tons of newsprint per year will be erected at Karad in Maharashtra State in India. The location is approximately 220 miles from Bombay. It is estimated that the plant will cost $20 million. The bagasse-paper plant will operate on patents developed by the Hawaiian sugar industry and Crown Zellerbach Corporation. (See SUGAR Y AZUCAR, Oct. 1960, pg. 40, "Bagasse-Paper Mill For Hawaii.") These two organizations acting jointly through the Hawaiian Development Corporation have entered into an agreement with Sahu Jain Ltd. of Calcutta to provide technical assistance and patent rights for the production of newsprint from bagasse. Sahu Jain Ltd. is the managing agency for one of India's largest industrial complexes comprising companies engaged in the manufacture of paper, sugar, cement, heavy chemicals, and nitrogenous fertilizers. Rohtas Industries Ltd., a member of the Sahu Jain complex, will build and operate the new paper plant.

Edward Elliott To Manage Bybrook

Edward Elliott has been appointed manager of the Bybrook Factory at Bog Walk, St. Cathrine, Jamaica. The 1200 tons per day mill is operated by United Estates Ltd. and owned by Harold V. Lindo. Mr. Elliott comes from Barbados and received his technical education at Glasgow Technical College while serving an apprenticeship with Mirrlees Watson & Company Ltd. On his return to Barbados he spent 11 years with the firm of D. M. Simpson, consulting engineers. His work with this firm included modernization of sugar mills, the installation of bulk handling equipment, erection of a steam power station and other important projects connected with the sugar industry. Mr. Elliott is accompanied by his wife.



PARA MAURICIO . . .

Una batería de centrífugas de descarga automática, de 48″ por 30″ y 1,200 r.p.m., para la fábrica de Labourdonnais, fotografiada al ser armada en nuestros talleres.
Centrífugas Broadbent han sido suministradas a las siguientes fábricas en Mauricio desde 1952:—

Beau Vallon	Medine, Reunion	St. Antoine	Benares
Bel Ombre	La Baraque	Union Flacq	Mon Loisir
Britannia	Riche-en-Eau	Union Sr. Aubin	Highlands
Mount Sugar Estates	Constance & La Gaiete	Mon Tresor & Mon Desert	Labourdonnais

UN TOTAL DE 93 CENTRIFUGAS

También se han recibido pedidos para las siguientes fábricas:—

Bel Ombre Constance Reunion St. Antoine Union Flacq

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El Central Okeelanta, en la Florida, Moderniza su Planta de Moler

Por Ubaldo Villar Lorenzo

DESDE 1953 los directores del Central Okeelanta, en la Florida, EE.UU., decidieron aumentar la capacidad de la planta de moler y de otros departamentos de la fábrica para poder atender la mayor demanda de azucar en el mercado. En este artículo nos referiremos a la planta de moler solamente.

En aquella época el tandem consistía de un juego de cuchillas, doble desmenuzadora y tres molinos de 31 pulgadas de diámetro en las mazas. La primer desmenuzadora, con rayado de 3", se movía por una máquina Corliss 20x42". La segunda desmenuzadora, con rayado similar, se movía conjuntamente con los tres molinos por otra máquina de vapor Corliss 30x60". La presion del vapor era de 125 lbs/psi.

Desde 1953 a 1959 se mejoraron las vírgenes construyendolas de acero fundido con diseño adecuado para mazas de 36"; se incrementó la presión del vapor a 150 lbs/psi; se eliminó la segunda desmenuzadora; y se instalaron los equipos hidráulicos Edwards y coladores vibratorios Link-Belt.

Para la zafra de 1959-1960 se añadió el segundo juego de cuchillas, movidas por una turbina de vapor de 250 hp.; se instalaron nuevos conductores intermedios con clutchs neumáticos "Wichita"; se añadió el cuarto nuevo molino diseñado y construído por Duncan Stewart y se instalaron turbinas de vapor individuales para cada molino del tandem. Estas unidades son turbinas de vapor "Weir" de simple etapa que trabajan con vapor a 250 lbs/psi y 406° Fahrenheit.

Hasta 1953 el promedio de caña molida era de 1200 tons/24 horas; y despues de las mejoras citadas, durante la Zafra de 1959-1960, la tarea de molida se elevó a 3,200 tons/24 horas.

Los planes originales contemplaban la instalación de dos molinos reemplazando la desmenuzadora que se suprimiría; pero para la zafra de 1960-1961 se ha decidido continuar utilizando la desmenuzadora e instalar un solo molino adicional. El otro nuevo molino, con rayado a 2", se instalará para la zafra de 1961-1962. Para tal fecha la instalación quedará segun el Dibujo 1, proyecciones de plano y de elevación.

Las ilustraciones 2 y 6 muestran las turbinas y engranajes reductores correspondientes a cuatro molinos; la ilustración 5 muestra el tablero de control.

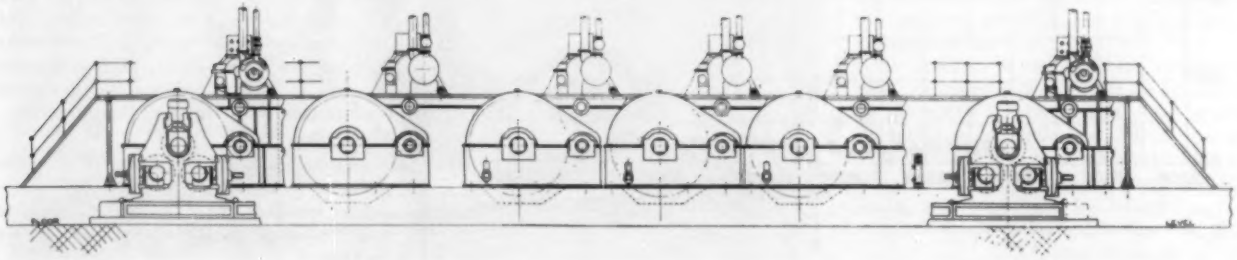
En la Tabla I se detallan las especificaciones de las turbinas "Weir" instaladas en el Central Okeelanta. Son de simple etapa, 400 BHP, estan trabajando con vapor a 200-225 Lbs/psi y a 397° Fah. En los diagramas 3 y 4 se pueden observar las condiciones de trabajo de las turbinas de Okeelanta con diferentes presiones en el vapor de entrada y salida y operando con 8 o 10 toberas. Creo que estos diagramas se explican por sí mismo.

TABLA I

LOS CONSUMOS DE VAPOR DE LA TURBINA

	5500 RPM	*5000 RPM*	*4500 RPM*	*4000 RPM*
Presion del vapor directo a la entrada de la turbina, Lb./pgd² absolutas	215	215	215	215
Caída térmica a través de la tobera, BTU US/Lb.	164	164	164	164
Capacidad Máxima de vapor, Lb./hr.	23900	23900	23900	23900
Consumo de vapor de la Turbina, Lb./HP.I./hr.	28.7	29.9	31.8	34.1
Potencia Indicada Máxima desarrollada, HP.I.	831	800	750	700
Pérdidas (Turbina y Engrane), HP.	19+17	15+16	12+17	9+14
Potencia al Freno Máxima Desarrollada, HP.F.	795	769	721	677
Potencia al Freno Aprovechable o Requerida, HP.F.	400	400	400	400
Pérdidas	19+8	15+8	20	17
Potencia Indicada Aprovechable o Requerida, HP.I.	427	423	420	417
Consumo Total de Vapor, Lb./hr.	12300	12670	13350	14200
Número de toberas que se requiere estén abiertas (Máximo 15)	8	8	9	10
Velocidad Lineal de los Alabes (Y), pie/seg.	576	525	469	418
Velocidad del Vapor (C), pie/seg.	2870	2870	2870	2870
Relación Y/C	.201	.183	.164	.146
Eficiencia de los Alabes	.662	.630	.595	.550
Eficiencia Total o del Conjunto	.540	.518	.489	.452
Eficiencia de la etapa de vapor (Stage Efficiency)	.815	.825	.825	.820
Consumo de vapor de la Turbina, Lb./HP.F./hr.	30.8	31.5	33.4	35.5

Fig. 1



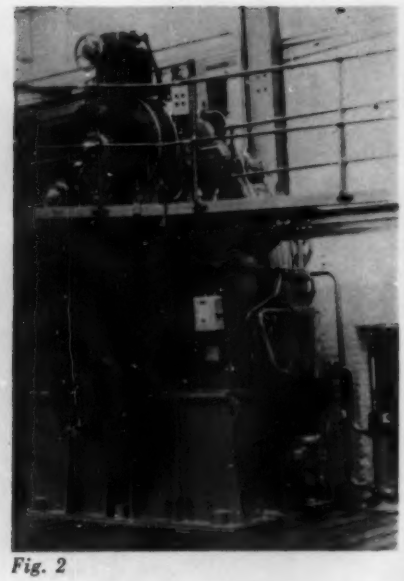


Fig. 2

Tuve oportunidad de visitar el Central Okeelanta en Diciembre 9 de 1959 y pude observar un funcionamiento altamente satisfactorio de las turbinas y sus engranes. La instalación vertical típica del sistema Stewart funciona muy suave y uniformemente, como un bloque macizo de rigidez extraordinaria; sin las vibraciones que muchos sospechan se pueden producir en este tipo de instalacion. La lubricacion es forzada a todos los puntos de la turbina y del tren de engranes, encontrándose selladas todas las chumaceras. La regulacion de velocidad es de sorprendente precision, muy característica del Regulador Woodward.

Cuando nosotros visitamos dicho central azucarero las turbinas estaban trabajando con 200 lbs/psi en el vapor directo y 12 lbs/psi en el escape, con 8 toberas abiertas. En la pizarra de control observamos y anotamos las velocidades siguientes:

Turbina del Primer Mol. . .	**4,000 rpm**
Turbina del Segundo Mol. .	**3,650 rpm**
Turbina del Tercer Mol. . . .	**3,500 rpm**
Turbina del Cuarto Mol. . .	**3,200 rpm**

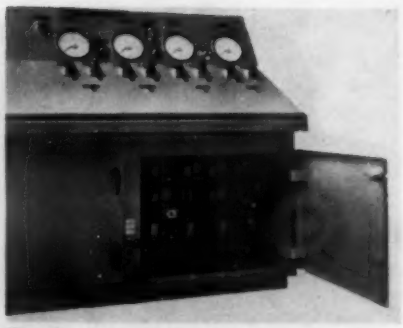


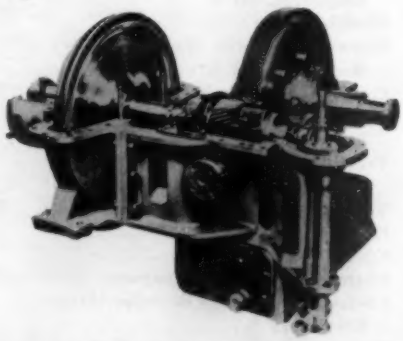
Fig. 5

De acuerdo con las cifras anteriores y buscando en los gráficos 5 y 5-A, (aunque los mismos han sido confeccionados para una contra-presión de 15 Lbs/psi), encontramos que la potencia al freno y el consumo de vapor de cada una de ellas es como sigue:

1° Molina	**387x36**	**13,932**	**lb/hr**
2° Molino	**365x38**	**13,870**	**lb/hr**
3° Molino	**355x39**	**13,845**	**lb/hr**
4° Molino	**340x42**	**14,280**	**lb/hr**
	Total	**55,927**	**lb/hr**

Vamos a considerar un consumo teórico de unas 56,000 lb/hr. Pero existe un instrumento para medir flujo instalado en una tubería que entrega vapor a todas las turbinas de los molinos, a una máquina Corliss de 200-hp. que mueve la desmenuzadora y á una turbina de vapor de 250-hp. que

Fig. 7

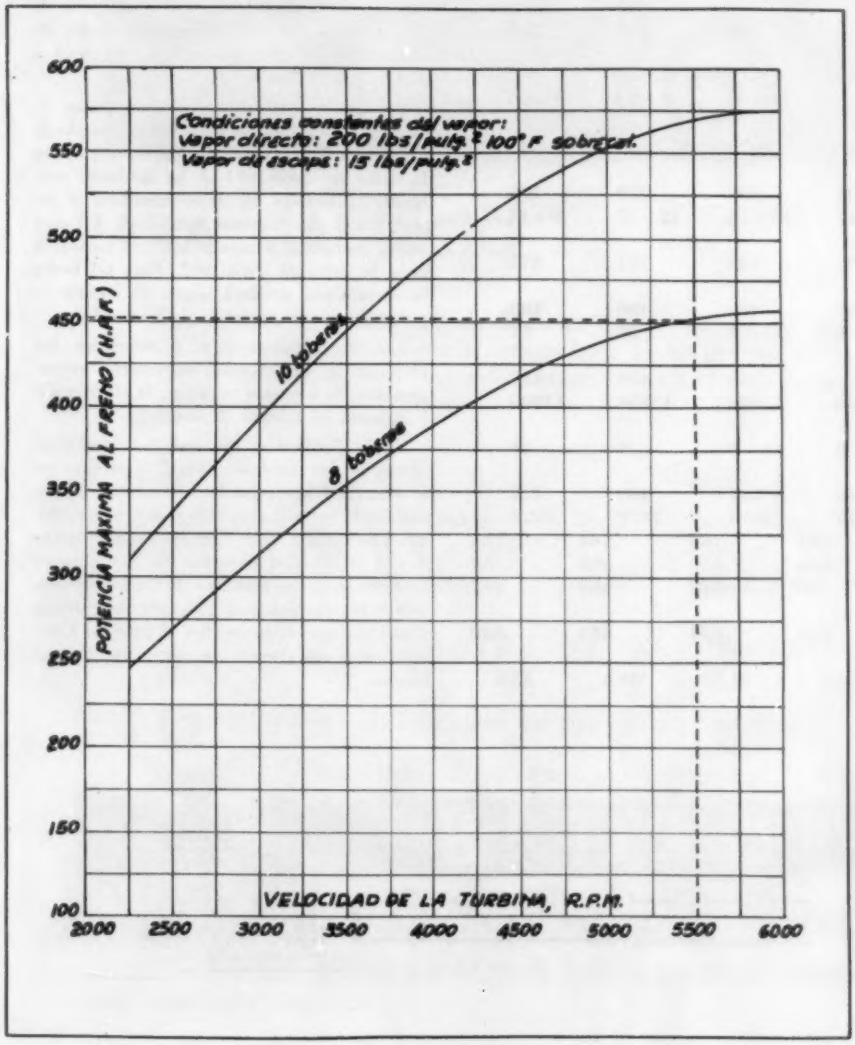


mueve las cuchillas de picar caña. Ese metro indicaba alrededor de 50,000 lb/hr.

Si asumimos la conservadora cifra de 30 lbs/hr/BHP, el consumo de vapor para mover las cuchillas y la desmenuzadora será alrededor de 13,500 lb/hr. Que deducidas del total de 50,000 lb/hr. registradas por el metro de flujo, el consumo de vapor para las turbinas de los molinos resultaría 36,-500 lb/hr.

Observando tales resultados yo me pregunto si es cierta la exactitud del instrumento instalado para medir el flujo de vapor o si es cierta la eficiencia de las turbinas.

Fig. 3



En el Central Cacocum, provincia de Oriente, Cuba, en el año 1946, se realizó la instalacion de la primer turbina de vapor para mover un molino de caña. Poco despues se hizo la instalacion en el Central Lula, de Luisiana, EE.UU. de N.A.

Un gran numero de unidades se han instalado despues en la mayor parte de los países azucareros de caña en todo el mundo; pero han sido preferidas las turbinas de etapas mútiples debido a su menor consumo de vapor. Eso es cierto, y en mayor grado aun cuando existen presiones elevadas en el vapor, vapor recalentado y bajas contra-presiones (presiones al vacío).

Sin embargo, los centrales azucareros generalmente no usan alta presion en el vapor directo, no utilizan vapor recalentado y necesitan una cantidad substancial de vapor de escape para la evaporacion. Por las razones anteriores y por su costo inicial y de mantenimiento mas alto yo no considero justificado el uso de turbinas de vapor de etapas múltiples.

Es muy notable el numero de turbinas de vapor de simple etapa instaladas en los ultimos años. Las instalaciones realizadas por Duncan Stewart & Co. Ltd. durante los ultimos cinco años son las siguientes:

Pais	*Turbinas "Weir"*	*Años trabajando*
Jamaica	1	2
Trinidad	2	2
Guayana Britanica .	5	5
Africa del Sur ...	6	5
India	2	3
Florida, EE.UU. ..	4	1

Conforme puede verse en la Fig. 7 se trata de una turbina de sencillez extraordinaria, suprimiendo un coupling, ya que el piñón helicoidal se encuentra en el mismo eje del rotor, siendo parte integral del mismo. El rotor esta construído de acero al níquel-cromo-molibdeno y rodeado de un baño de níquel que lo hace mas resistente a la corrosión. Aquellas partes del eje donde actúan las chumaceras y las empaquetaduras de carbón tienen un baño de cromo para reducir el desgaste. La caja de la turbina es de acero fundido. Está equipada con un Regulador Woodward hidroneumático de gran precisión que funciona maravillosamente bien.

Al observar y revisar esta instalación deseo destacar la forma singular en que se ha procedido a conectar la turbina al tren de engranes, haciendo aprovechamiento del espacio disponible en sentido vertical y resultando en forma mas compacta. El conjunto, que aparece en las fotografías, corresponde a una de las instalaciones del Cen-

(*Sigue en la página* 85)

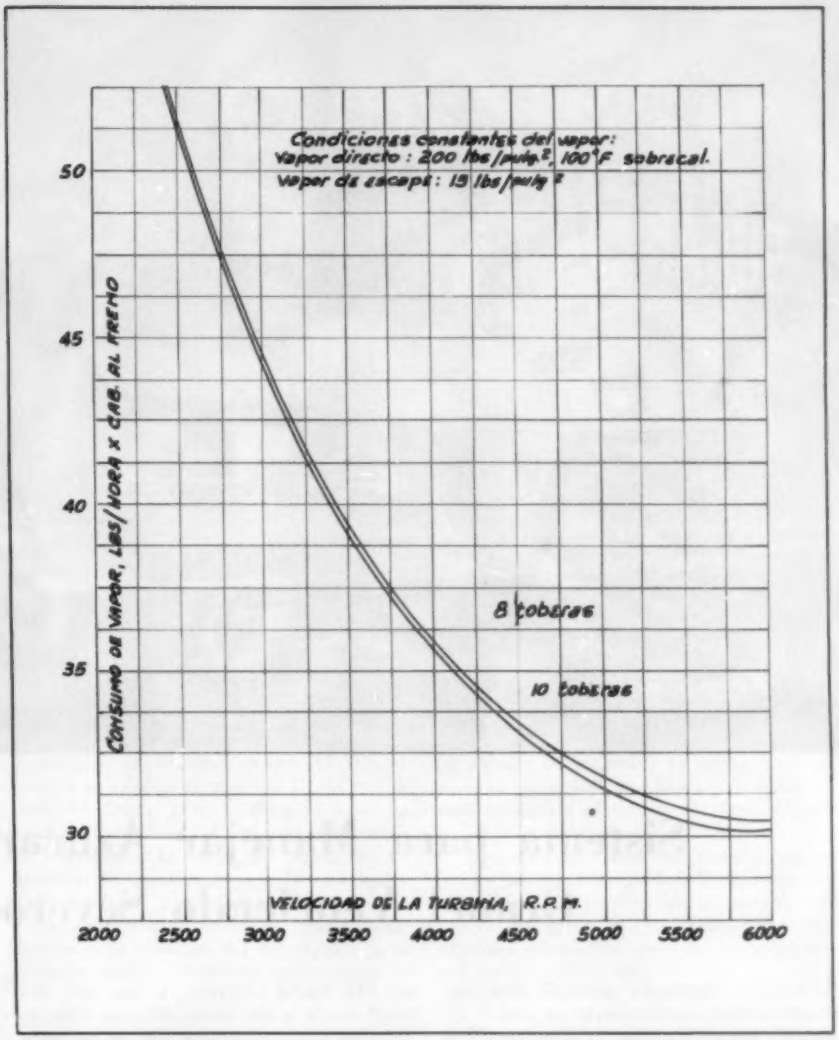


Fig. 4

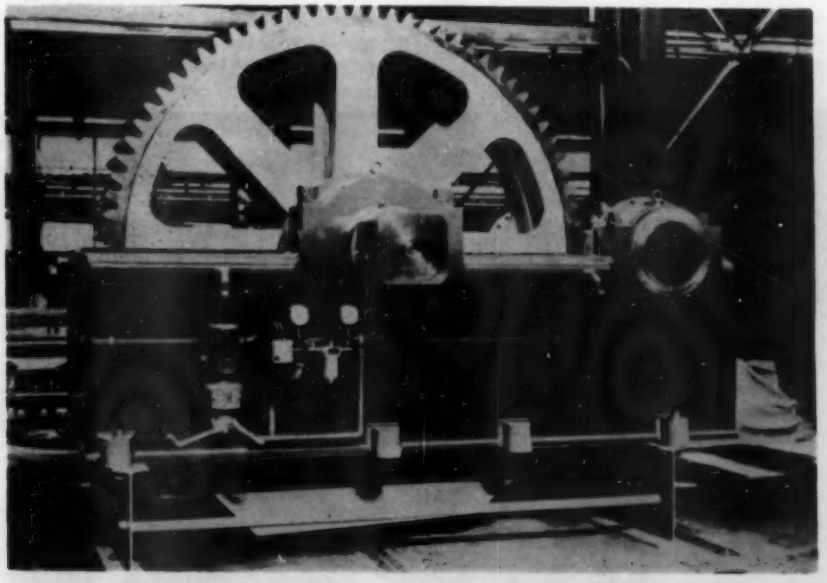
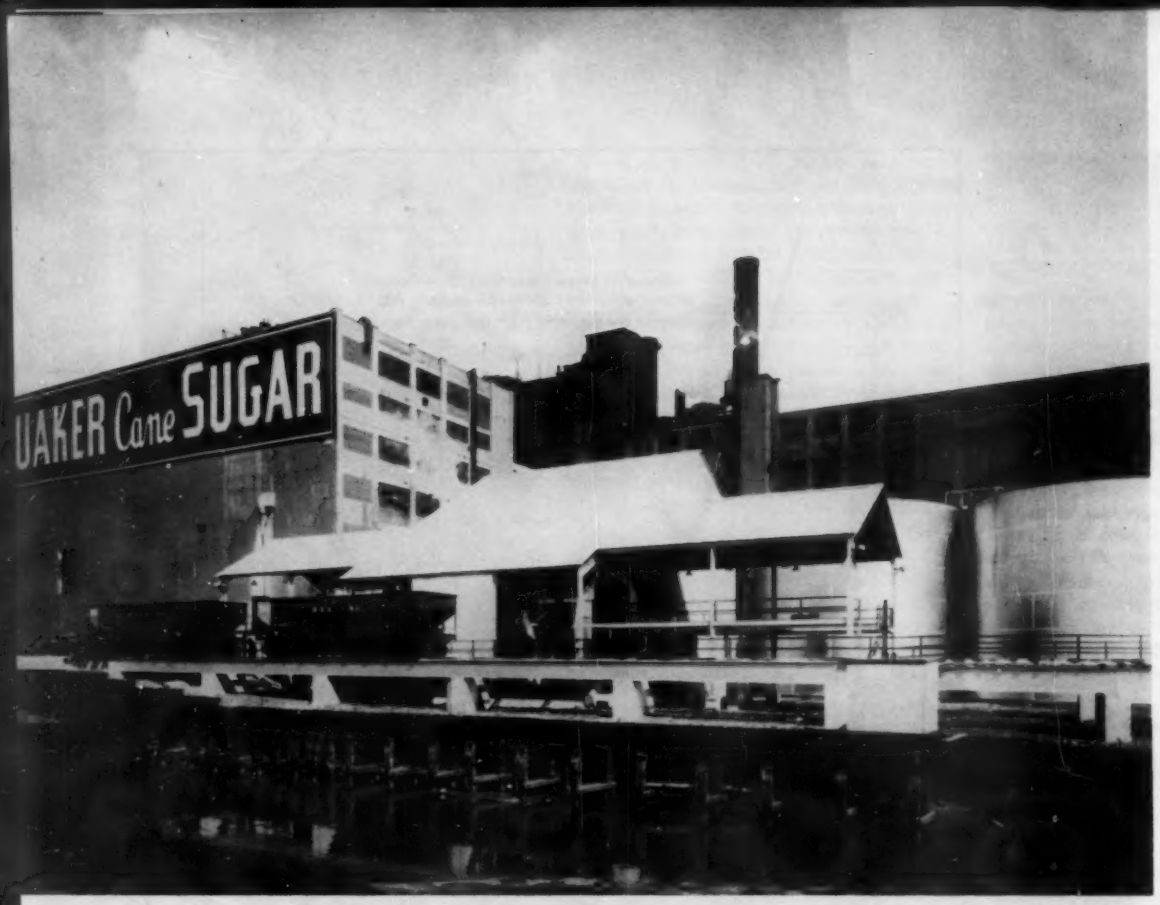


Fig. 6



El sitio donde está instalada la refinería de azucar de la National en el río Delaware proporciona el espacio mínimo para recibir crudos a granel. Hubo que diseñar un sistema único para hacerle frente a tales condiciones. La ilustración muestra el área disponible para recibir carros - tolvas de 70 toneladas.

Sistema para Manejar Azucares Crudos a Granel Venciendo Severos Obstáculos

Un nuevo basculador giratorio para carrosque además puede operar en planos inclinados hasta 30-grados, es el equipo clave de un sistema de descarga de azucares crudos que le ha reportado importantes ventajas a la National Sugar Refining Company.

El sistema ha sido instalado en la Refinería de la National en Filadelfia, en las márgenes del río Delaware y permite recibir y manejar azucares crudos a granel apesar de las severas limitaciones de espacio disponible. La nueva instalación ha manejado 560 toneladas en un período de 47 minutos. Se espera una capacidad óptima de 600 toneladas por hora cuando se instalen vibradores Syntron y se organice un horario mas apropiado en el trabajo de los carros.

La instalacion fue diseñada y construída por The Austin Company, la que tuvo que hacer frente a dos obstáculos: un área de descarga muy restringida que no permitía instalar un basculador o virador giratorio standard para carros y la necesidad de construír un foso o excavación a prueba de agua y protegido todo el año contra las inclemencias del tiempo. Suministrar una excavacion por debajo del nivel del mar para alojar las tolvas recibidoras del azucar hubiera tenido un costo prohibitivo.

Para hacerle frente a la falta de espacio, las bases para las líneas se construyeron sobre una estructura de caballetes, con los

Los carros-tolvas se cubren con lonas enceradas para el recorrido desde el muelle a la refinería; se quitan las lonas y se mueven los carros de ferro-carril hasta un basculador o virador giratorio que los revuelve hasta una inclinación de 30 grados, para verter el azucar dentro de la tolva situada bien por encima del nivel del agua.

Puede verse el virador de carros, diseñado y construído por The Austin Company, enrollarse segun gira; aquí ha girado 45 grados. Abajo, hácia la derecha, puede verse uno de los carriles sobre los cuales asciende 17 y medio pies.

raíles diez pies por encima del nivel del agua. Asi fué posible situar la tolva de 70 toneladas y el basculador o virador de carros. Este último hace voltear en plano inclinado los carros para que puedan descargar el azucar dentro de la tolva. Desde la tolva el azucar es descargada a dos alimentadores y despues a un conductor de banda o correa con capacidad para 600 toneladas por hora, el cual transporta el azucar al almacén para su depósito, o para ser procesada.

El azucar crudo que se recibe se descarga de los buques a unas tolvas donde se pesa, encontrandose dichas tolvas en Port Richmond Yard, Filadelfia; desde donde se transporta por carros de ferrocarril hasta la refinería, a una distancia de 2.7 millas. Se amarran lonas de nylon enceradas sobre el cargamento para prevenir pérdidas en tránsito. En la refinería se mueven los carros por un Tractor Móvil Whiting que los sitúa en posición de descarga. Durante estas operaciones el basculador o virador inclina los carros a unos 30 grados, a una altura aproximada de 17 y medio pies. En la posición máxima de descarga el carro queda a 150 grados. El ciclo total de descarga toma tres minutos, sin contar el tiempo para situarlos y sacarlos, a sí como su limpieza.

Los ingenieros de la Compañia Link-Belt colaboraron con la firma Austin en todo lo relativo a los dispositivos mecánicos de la instalación. Diseñaron el basculador o virador especial para carros, que consiste en una plataforma de unos 49 y medio pies de largo, capaz de manejar un carro-tolva de ferrocarril de 70 toneladas de capacidad. El peso bruto del virador, incluyendo el carro, es aproximadamente 97 toneladas.

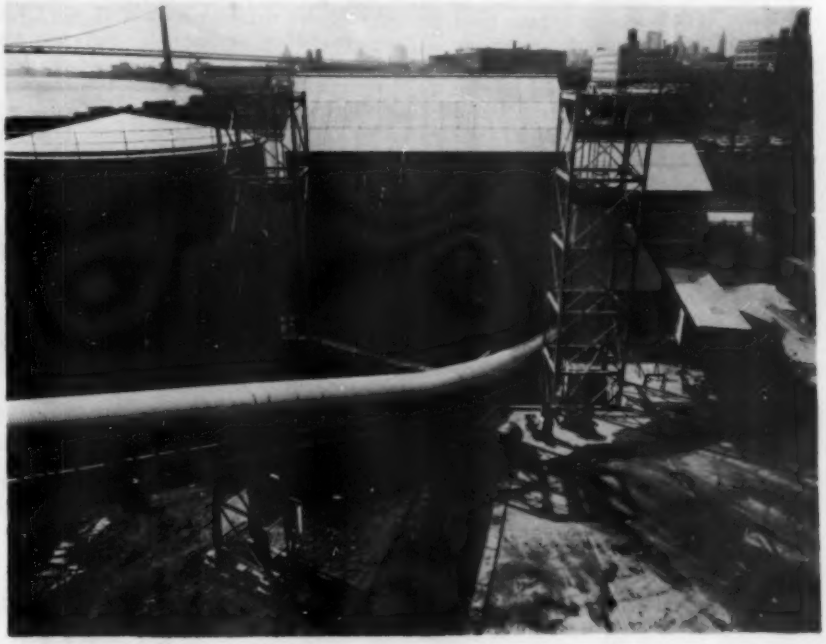
El virador de carros dispone de dos juegos de mordazas completamente automáticas que aseguran y fijan en posicion al carro. Las mordazas tienen una envergadura que alcanza todo el ancho del carro: un extremo agarra un lado y el otro extremo el opuesto, adaptándose a las irregularidades en la altura de los lados del carro. Cada mordaza está provista de su propio mecanismo de sujeción, de retén y para hacerla bajar, incluyendo un motor de 5 HP, freno, eje paralelo de doble reduccion, reductor de velocidad y engranajes.

Durante la operacion las mordazas hacen presa cuando el carro ha girado aproximadamente siete grados. La rotación continúa entretanto que el virador alcanza los 30 grados de inclinacion, hasta su posicion de descarga sobre la tolva receptora. El motor es detenido automáticamente por un interruptor. Se descarga el contenido del carro. Entonces el operador mueve la palanca del interruptor en sentido opuesto. El virador acelera su cambio de posición a toda velocidad. Al llegar a unos 15 grados de la posicion inicial se reduce automáticamente la velocidad a la mitad, por medio de un frenado regenerador, y cesa la rotacion.

El operador puede parar el virador en cualquier posición intermedia, sencillamente moviendo la palanca del interruptor a la posición neutra. El virador queda fijado en su lugar por la acción de un freno de muelles.

El azucar crudo pasa desde la tolva diseño Link-Belt, a través de ocho aberturas de descarga, sobre dos bandas alimentadoras. Estas entregan el azucar a un conductor de correas de 36 pulgadas de ancho, con capacidad para 600 toneladas por hora, el cual transporta el azucar al almacén para ser depositada o procesada.

El virador de carros, las áreas donde se quitan las lonas enceradas, las bandas alimentadoras, los conductores de correas y el puesto del operador están todos cubiertos, dándoles proteccion contra las inclemencias del tiempo todo el año.



Un conductor transporta el azucar desde la tolva del virador de carros hasta el almacén, venciendo una inclinacion de 20 grados. El sistema de conductores fué suministrado por la Compañía Link Belt.

Bagazo Coloreado

Un Producto Ideal Como Cubierta Protectora de Suelos y Plantas (Mulching)

por Wm. L. Owen

El uso de bagazo de caña curado, como cubierta protectora de suelos y plantas, está alcanzando rápida y creciente popularidad y demanda entre jardineros, floristas y cultivadores de árboles frutales. Eventualmente su elaboración puede llegar a ser una amplia industria en todos los países donde se produce caña de azucar. Los objetivos del "mulching" creando una cubierta protectora de suelos y plantas son los siguientes: (1) Proteger las raíces de las plantas o arbustos contra el frío excesivo o la sequía; (2) Conservar la humedad alrededor de las raíces de las plantas; (3) En el caso de árboles frutales proteger las frutas que se caen, contra magulladuras al dar contra el suelo o contaminaciones por las suciedades de la tierra. Las cualidades que debe reunir el "mulch" para satisfacer estos propósitos son: (1) Resistencia a la accion del tiempo; (2) Color capaz de absorber calor del sol; (3) Una contextura adecuada que permita un relleno capaz de aumentar la retención de humedad en el área donde se aplica; y (4) Una composicion tal que no imparta substancias tóxicas al suelo por lixiviacion.

El proceso que ordinariamente se sigue para elaborar "mulch" de bagazo es el siguiente: (1) Se seca el bagazo, hasta un 10% aproximadamente de contenido de humedad, en deshidratadores rotativos calentados con gas con el fin de facilitar el tamizaje; (2) Se tamiza; (3) El tamizado se envía al colector de polvo a través de una tubería de succión; (4) Se introduce agua en el separador para saturar el bagazo, descargándolo por el fondo a un conductor sinfin que lo traslada hasta afuera. Esta operacion es necesaria para activar la descomposicion del bagazo y para que adquiera el color obscuro tipico del humus. (5) Por medio de bulldozers el material se acumula en grandes pilas; (6) Estas operaciones tienen lugar en Luisiana durante los meses de Octubre, Noviembre y Diciembre; permaneciendo en proceso de cura hasta Enero, que se devuelve a la fábrica para volver a secarlo en los deshidratadores. Conforme puede observarse, estas operaciones, que se hacen con el fin de estabilizar el producto e impartirle color apropiado, toman varios meses y exigen sacar y retornar el voluminoso bagazo.

Este proceso no envuelve solamente alto costo de mano de obra, sino que se pierde mucho bagazo por deterioro y descomposicion. Se destaca fácilmente que si este material puede ser coloreado económicamente y estabilizado con alguna substancia notóxica de modo que su composicion final reuna las especificaciones requeridas y detalladas anteriormente; el bagazo de caña encontraría una aplicación o uso de alcance nacional, con el resultado de una gran demanda para el producto.

Cuando se sometió este problema para su estudio por los Laboratorios Wm. L. Owen, el primer paso fué tratar de encontrar un tinte de anilina que impartiera el color deseado sin adicionar ninguna substancia tóxica ni olor indeseable. Numerosos ensayos con tintes negros y castaños fallaron en suministrar el color deseado, no obstante las cantidades de tinte empleadas. Además, el costo del tratamiento traspasaba los límites económicos del proceso.

Volvimos nuestra atención hacia los óxidos metálicos y empezamos a ensayarlos como materias colorantes del bagazo, toda vez que son buenos tintes, no son tóxicos e inodoros. Sin embargo, nuestras primeras pruebas no fueron satisfactorias: el tejido celulósico del bagazo no retenía el color, aunque los óxidos metálicos se aplicaran en soluciones bastante concentradas. En otras palabras, se necesitaba aplicar previamente alguna substancia mordiente y fijadora que promoviera la penetración del color. Y con este punto bien presente dedicamos nuestra atencion a usar un agente acondicionador previo a la aplicacion de la substancia colorante.

Sin embargo, no podiamos perder de vista que el costo del tratamiento quimico del bagazo no podía exceder de $3.00 por tonelada. Despues de numerosas pruebas encontramos que las siguientes proporciones de fijador y de materia colorante daban los mejores resultados y demostraban ser enteramente satisfactorias.

Tales proporciones y costos son:

	Lbs. para 28.9 gals.	*Costo US Cy. 100 Lbs.*
Materia		
Colorante	1.16 Lb @ 16 cts	$18.56
Fijador	0.56 Lb @ 13 cts	7.28
	Total	$25.84
Volumen de solucion para 100 Lbs.		28.9 Gals.
Volumen necesario cuando se atomiza		16.7 Gals.
Costo de los productos por tonelada		$3.00 USCy

Conforme puede observerse el costo disminuye considerablemente cuando los productos se atomizan, en lugar de sumergir el bagazo en la solucion colorante.

Se hicieron ensayos para determinar el grado de retención por el bagazo tratado encontrando que el color era firme y no desaparecía aun por inmersión en agua durante varios días consecutivos. Se comprobó además que las condiciones atmosféricas aumentaban la intensidad o fuerza del color sobre el material tratado.

Preparar bagazo coloreado segun se describe anteriormente, permitirá ahorrar semanas de tiempo y además se obtendrán substanciales economías de mano de obra, en comparación con el proceso actualmente en uso.

A un costo de solo $3.00 por tonelada este nuevo proceso permitirá aumentar la elaboración de "mulch" o cubierta protectora de suelos y plantas, derivado del bagazo; y permitirá surgir un negocio popular y lucrativo.

■

Desintegrador Gruendler para Paja de Caña

En un boletín publicado por Gruendler Crusher & Pulverizer Company, de San Luis, EE.UU. se describe un nuevo desintegrador para paja u hojarasca de la caña que trabaja en el mismo campo durante la cosecha. Un tractor tira del desintegrador que es atendido por un solo operario. La paja de la caña es inducida dentro de la máquina y los fragmentos soplados a través de una chimenea y esparcidos sobre el suelo. La unidad va montada sobre un bastidor de acero provisto de cuatro ruedas con sus neumáticos. La máquina puede llevar su propia unidad mortriz o puede moverse desde el tractor. La paja desintegrada puede ser incorporada al suelo como elemento acondicionador; eliminándose tener que quemar la paja u hojarasca y la necesidad de araduras pesadas.

otra primera por

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PLANTAS COMPLETAS PARA LA INDUSTRIA AZUCARERA

Juegos de Cuchillas de Caña • Desfibradoras Maxwell • Molinos Fletcher con Transmisión por Turbina o Máquina a Vapor • Mazas de Metal "Atlas" • Pesas Maxwell-Boulogne para Líquidos • Calentadores de Jugo • Clarificadores Fletcher • Filtros-Prensas • Evaporadores con Tubo de Bajada Hermético • Tachos de Paso Central • Bombas de Aire Seco y Gas CO_2 • Cristalizadores Fletcher • Bombas "Amarilla" de Desplazamiento Giratorias

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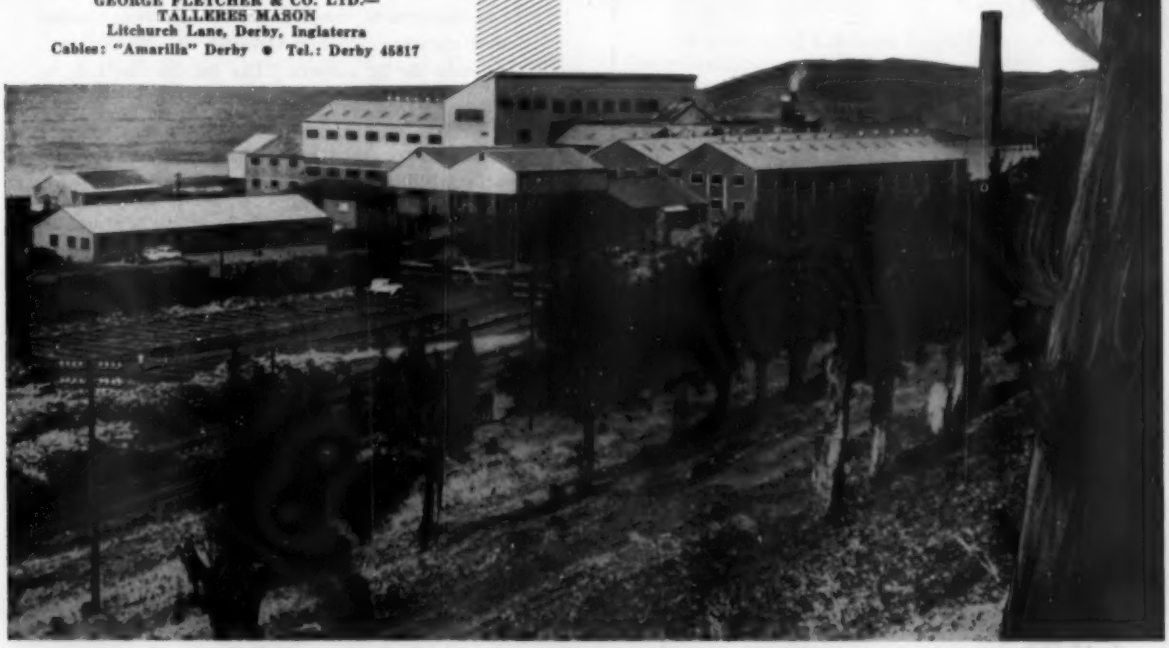
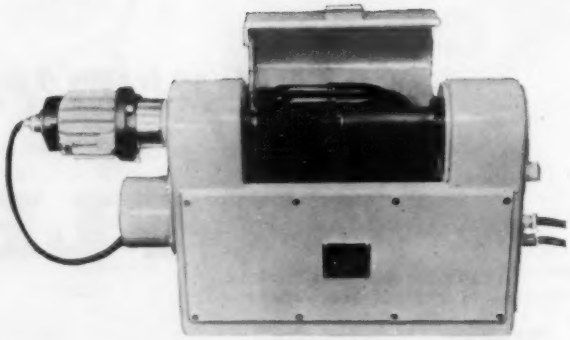
1

Perdonen nuestro entusiasmo . . . pero el hecho es que hemos instalado la *primera* refinería de azúcar por el proceso de carbonatación anexa a una fábrica de azúcar crudo en Africa del Sur, para la Reynolds Bros. Ltd. de Sezela, Natal. La nueva refinería emplea el proceso de doble carbonatación y produce azúcar refino de la mejor calidad.

Deseamos que sepan que FLETCHER está en condiciones de proyectar e instalar refinerías de azúcar por los procesos de doble carbonatación, de sulfitación o de carbón vegetal para funcionar conjuntamente con *su* fábrica de azúcar.



Regulación automática para procesos



Refractómetro Hilger de Flujo Continuo

El refractómetro de flujo continuo hace una comparación continua entre una muestra de flujo y un líquido de referencia. Se puede usar para medir la concentración y comprobar la pureza de cualquier flúido transparente. El instrumento es completamente automático, e indica inmediatamente cualquier variación en el índice de refracción de la muestra. Las lecturas de este refractómetro también se pueden usar para hacer un registro permanente de la concentración, o para establecer un sistema de regulación para devolver la concentración a su nivel correcto. Ilustrado arriba.

Polarímetro Hilger M 500 Automático

El polarímetro M 500 se emplea para análisis rutinarios de azúcar, productos químicos, aceites, bebidas gaseosas, o en una palabra, para cualquier líquido ópticamente activo. Se usa para fines de aviso continuo y comprobación a intervalos de tiempo, o para tomar muestras de templas. Las lecturas, que pueden ser en grados de sacarosa o grados de arco, son dadas en cifras, y pueden ser indicadas, registradas o impresas. El instrumento da lecturas hasta 0.05° S, aunque su exactitud funcional es todavía más precisa, y sus límites abarcan cualquier intervalo de 14° en la escala de sacarosa Ilustrado en la página 13.

Solicite datos completos.

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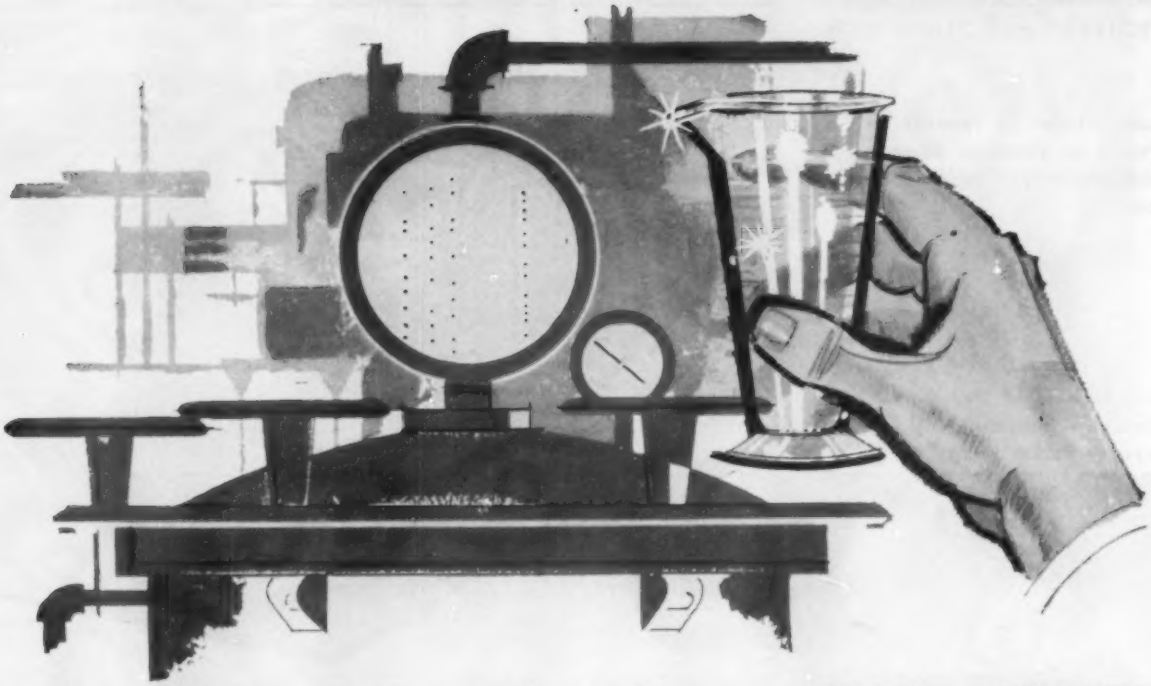
¡Nuevas Normas de Regulación de la Filtración



hechas posibles por los auxiliares filtrantes EAGLE-PICHER!

He aquí la razón:
Las extensas operaciones de la Eagle-Picher en Nevada han hecho nuevamente disponibles *varios millones* de toneladas de diatomita para auxiliares filtrantes de excelente calidad.

Los grados del material son exactamente determinados en la mina mediante "Pruebas Estratigráficas", lo que asegura extraordinaria pureza desde el principio.

La Eagle-Picher produce una extensa gama de grados de auxiliar filtrante en la fábrica de productos de diatomita más nueva y más eficiente del mundo.

Con esta notable "uniformidad de grados", usted puede regular la claridad con exactitud dentro de un régimen de flujo también regulado.

Los auxiliares filtrantes Eagle-Picher vienen esterilizados, son química y físicamente inertes, y no pueden alterar el sabor ni impartirlo.

Usted obtiene perfecta filtración que elimina todos los termófilos y sólidos indeseables dentro de los límites coloidal y submicroscópico.

La pureza sin par de los auxiliares filtrantes Eagle-Picher redunda en menor densidad húmeda y permite cubrir mayor extensión superficial. Los consumidores anuncian importantes economías fabriles.

Muestras para Pruebas y Servicio de Consultas a su disposición. Comuníquese con nosotros cuando quiera, por escrito, telégrafo o teléfono.

EAGLE EP PICHER

Desde 1843

EAGLE-PICHER

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Cincinnati 1, Ohio, E.U.A.

Para datos técnicos y muestras, envíenos el cupón inserto
The Eagle-Picher Co., Depto. S-1160, Cincinnati 1, Ohio, E.U.A.

☐ Sírvasenos enviar más información
☐ Sírvanse enviar muestra _____ cantidad
Tipo de producto a filtrar _____

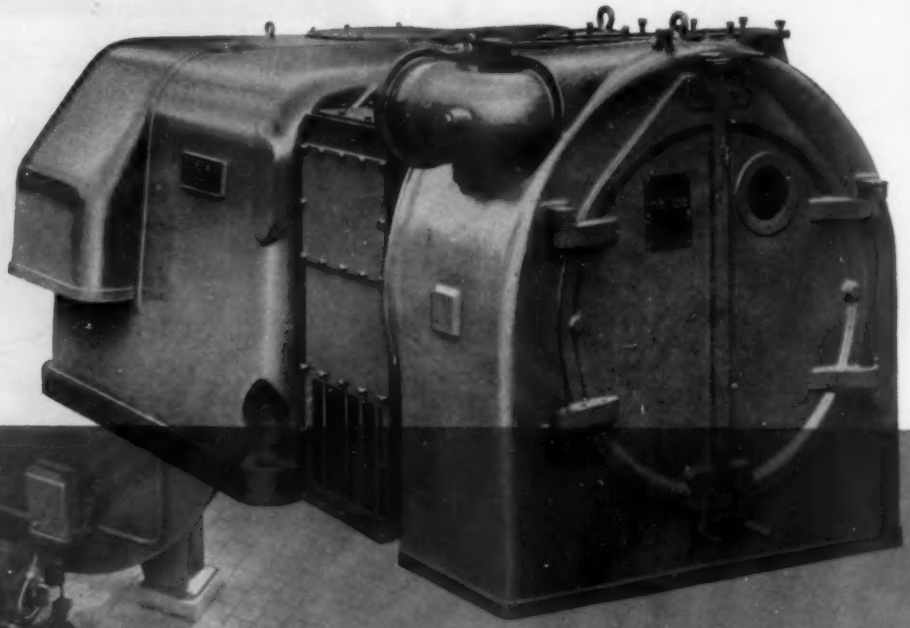
Auxiliar Filtrante a usar para:
☐ Filtración primaria ☐ Precapa
☐ Alta claridad o acabado ☐ Mezcla

NOMBRE_____ CARGO_____
EMPRESA_____
DIRECCION_____ CIUDAD_____
ESTADO O PROV._____ PAIS_____

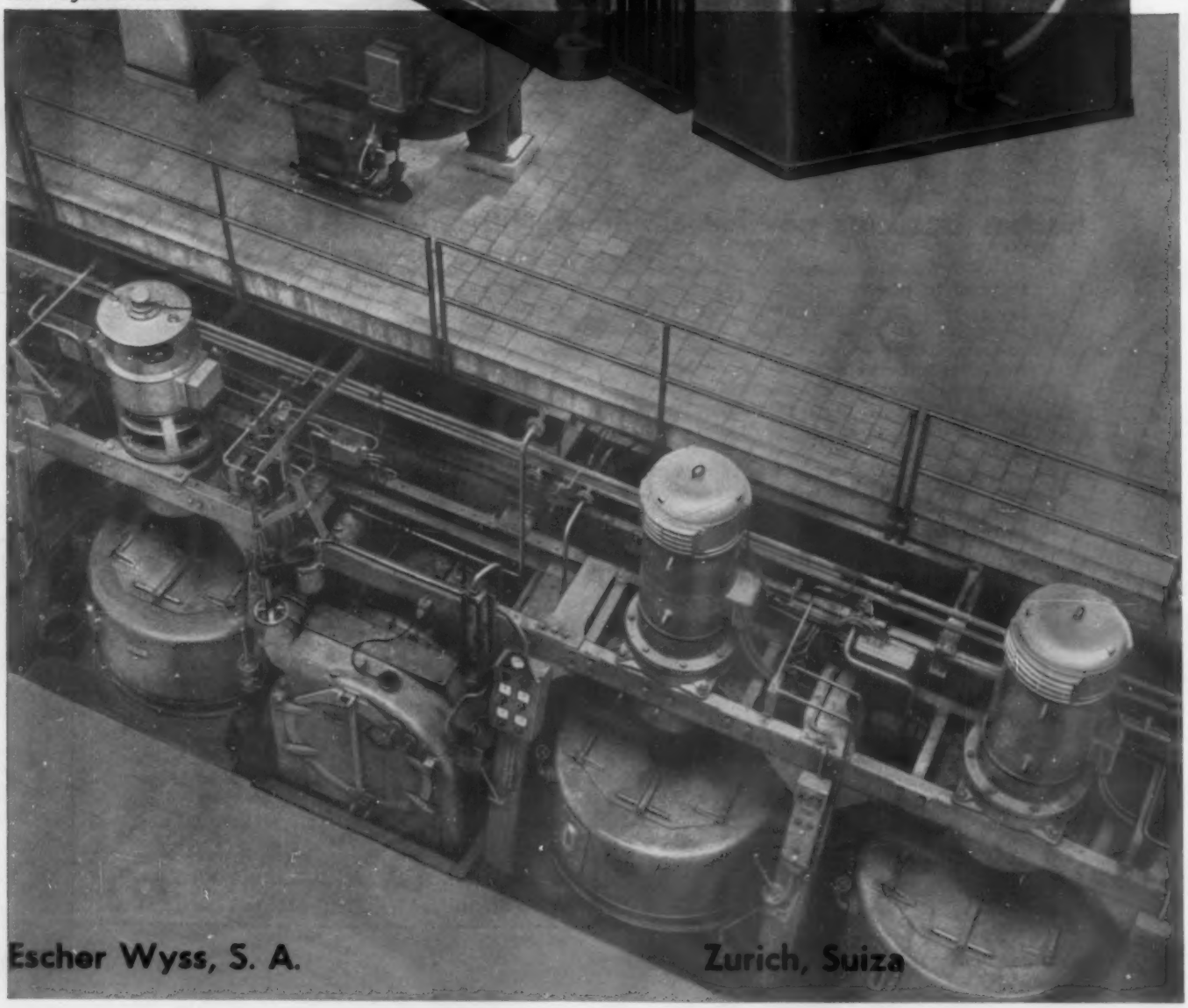
ESCHER WYSS

Centrífugas de funcionamiento continuo para la Industria Azucarera

Estas centrífugas se encuentran en servicio en fábricas de azúcar diseminadas por todo el mundo.



Centrifuga horizontal Escher Wyss colocada en una bateria de centrifugas verticales.



Escher Wyss, S. A. **Zurich, Suiza**

Mecanización total

es el secreto de las fincas producentes

He aquí en acción una *mecanización total* en la compañía West Indies Sugar Company, Ltd., de Jamaica, W. I. En la fotografía superior, un Tractor Cat D8 abre zanjas profundas para obtener un drenaje e irrigación adecuados para una nueva cosecha de caña de azúcar. El trabajo se hace a un promedio de 2½ acres (1 hectárea) por hora.

En la fotografía inferior, un Tractor Cat D4 remolca tres vagones cargados con 5 toneladas de caña. El trabajo requiere cruces de zanjas con cargas repletas, u operaciones a través del fango, las cuales el D4 ejecuta con absoluta seguridad.

Otros ejemplos de la mecanización total son: *Carga de caña,* con un Tractor Cat D4 y accesorios; *formación de tierras,* con trafillas y niveladoras para obtener un buen drenaje; y *desmonte de terrenos,* con Tractores Diesel Cat equipados con Bulldozers, Rastrillos Fleco, Hojas Rome K/G y otras herramientas.

¡Para que se dé cuenta de lo que la *mecanización total* puede hacer por usted, póngase cuanto antes en comunicación con el Distribuidor Caterpillar más cercano!

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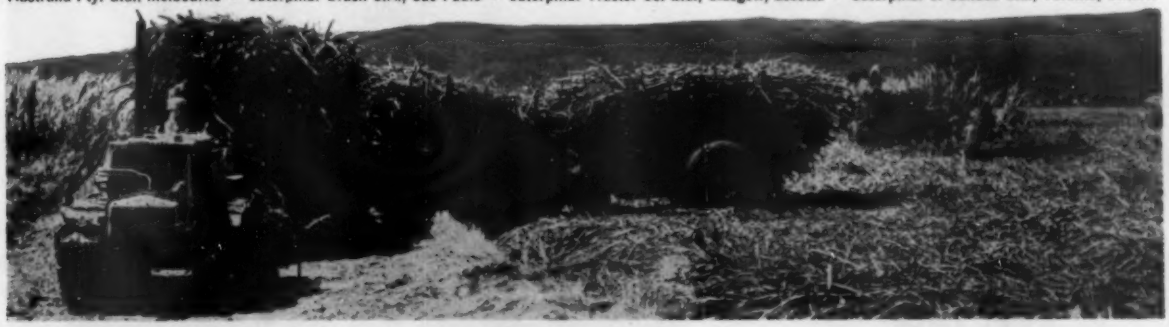

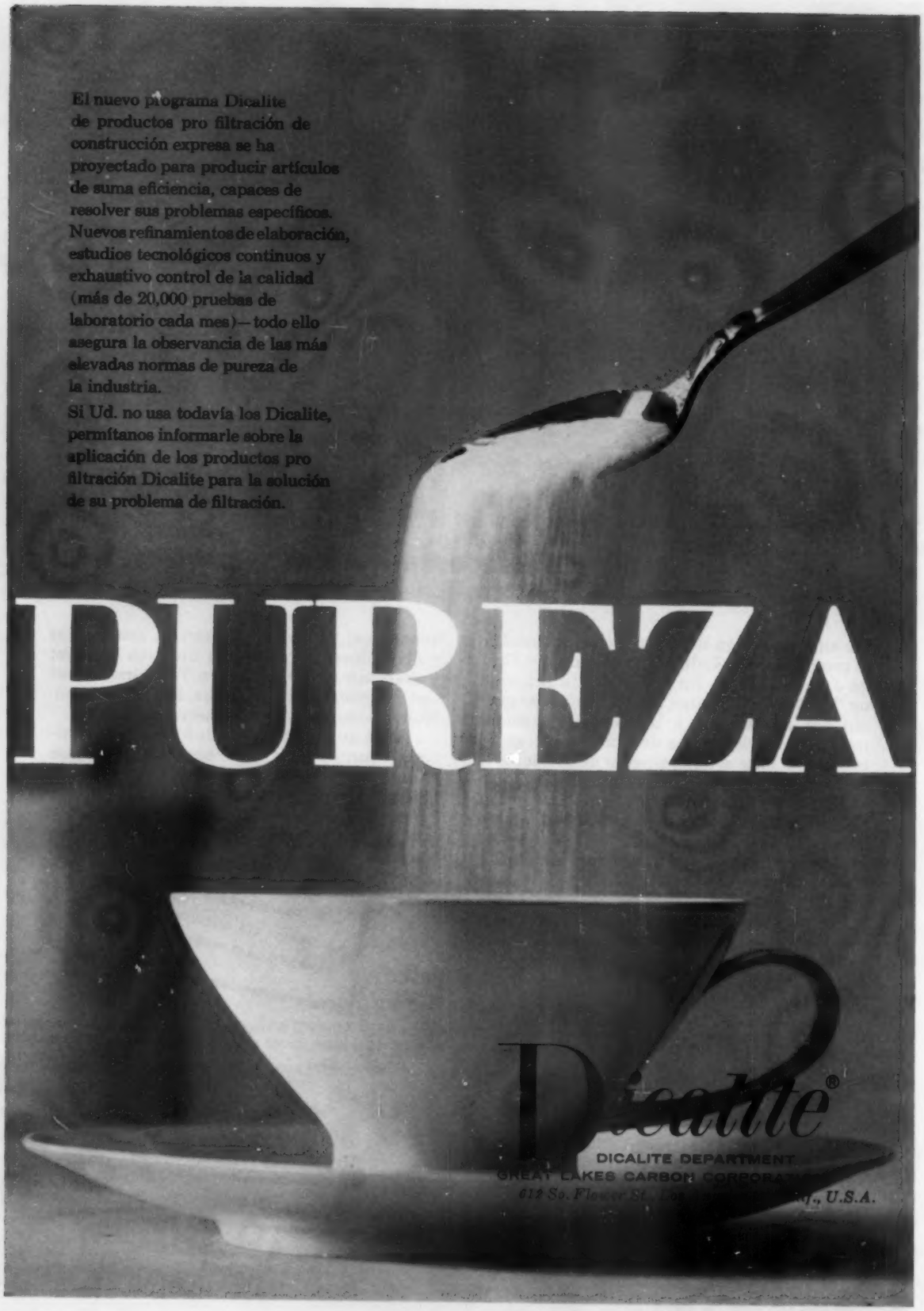
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Si Ud. no usa todavía los Dicalite, permítanos informarle sobre la aplicación de los productos pro filtración Dicalite para la solución de su problema de filtración.
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*"El deseo de obtener precios de ganga probablemente ha costado a la industria azucarera más dinero que cualquier otro factor"**

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La maquinaria azucarera Squier le brinda una economía permanente que gozará Ud. durante toda la larga vida de esta maquinaria superior.

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■ Año tras año, el costoso tiempo muerto es reducido a un mínimo debido a la confiabilidad Squier.

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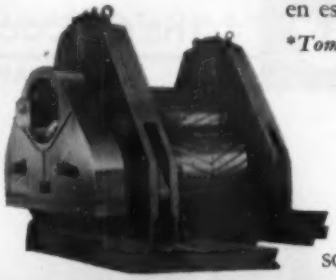
Estos importantes factores—más bien que tan sólo el costo inicial—deben influír su selección de maquinaria azucarera. Tomando estos factores en cuenta, sin duda alguna, escogerá Ud. Squier.

Escríbanos hoy mismo y sin asumir Ud. ninguna obligación, le enviaremos un boletín o le avisaremos quién nos representa en esa comarca.

**Tomado de un Editorial.*



THE SQUIER CORP.

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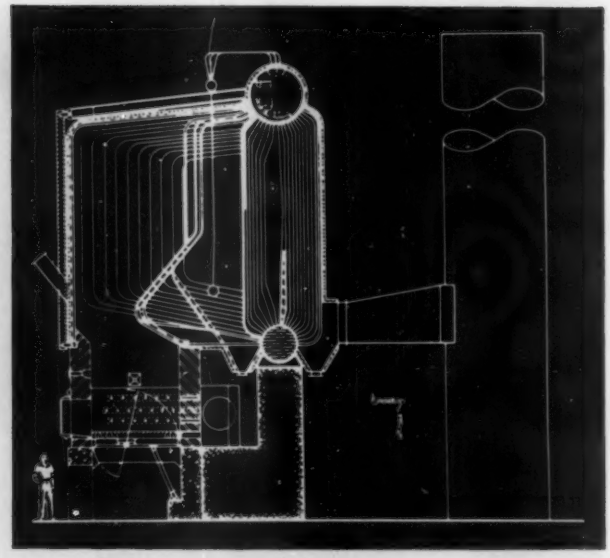
BUFFALO, NEW YORK, E.U.A.

SQUIER — los creadores del afamado Trapiche de Tensión Triangular.

Ahora, la mejor caldera para quemar bagazo es todavía mejor



Caldera Sterling de Dos Colectores y Baja-Pérdida-por-Tiro, provista de Hogar Ward para quemar bagazo.

Lea estos datos referentes a una caldera moderna, mejorada, diseñada por la B&W expresamente para quemar bagazo

La Caldera B&W Sterling de Dos Colectores y Baja-Pérdida-por-Tiro *no* es meramente otra caldera industrial para quemar bagazo. Es una unidad generadora de vapor compacta, diseñada expresamente para quemar bagazo en el Hogar Ward mejorado.

La B&W se valió de sus 83 años de experiencia en el diseño y construcción de calderas para la industria azucarera para hacer una buena caldera todavía mejor. Ahora, se han incorporado todas las mejores características de la primera unidad de baja-pérdida-por-tiro, diseñada por la B&W en 1946, *más* las mejoras en diseño. Más aún, usted ahorra en el costo inicial de la caldera y de la planta.

He aquí lo qué esta caldera mejorada le ofrece . . .

1. Funcionamiento continuo y seguro

● Reacción *instantánea* a grandes oscilaciones de carga. Esta unidad puede variar de 25 a 100 por ciento de capacidad en el tiempo que se necesita para aumentar la velocidad del soplador.

● El fondo basculante permite quemar bagazo continuamente durante *toda* la campaña—sin parar para limpiezas.

● Se puede quemar combustible de diverso contenido de ceniza y suciedad con el mínimo de escoria. Las paredes enfriadas por aire y la bóveda enfriada por agua de las celdas Ward reducen la formación de escoria—no hay parrillas en que se pueda formar escoria.

2. Funcionamiento económico

● El empleo de celdas Ward provee una reserva en la capacidad de encendido *sin tener que quemar combustible* auxiliar. Quema bagazo de muchos grados de grosor sin cambio en capacidad. No hay que regular el lecho de combustible.

● Las exigencias mínimas de fuerza auxiliar permiten un alto flujo neto de vapor. El vapor generado se utiliza para *producir*, y no para mover el equipo auxiliar de la caldera.

3. Menor inversión de capital

● El costo de la caldera y de la planta es más bajo, por libra de vapor.

● *No* se necesita soplador de tiro inducido.

4. Mínima atención y mínima conservación

● El hogar no tiene piezas movibles.

● La presión del vapor se controla por un regulador de tiro—fácilmente ajustado por el operador.

● Los paros durante períodos de inactividad se simplifican. El recalentador drenable simplifica los paros, a la vez que protege los tubos contra la corrosión.

● Encendido más rápido y seguro después de los paros. No hay que limpiar el recalentador—ya que se puede drenar antes de encender la caldera.

En una palabra, la Caldera B&W Sterling de Dos Colectores y Baja-Pérdida-por-Tiro está diseñada para reducir los costos de producción por la reducción de los costos de generación de vapor en centrales azucareros. Para más información sobre ésta y otras calderas encendidas con bagazo, sírvase comunicarse con el representante de la B&W más cercano, o escriba a The Babcock & Wilcox Company, Departamento de Exportación, 161 East 42nd Street, New York 17, N.Y., E.U.A.

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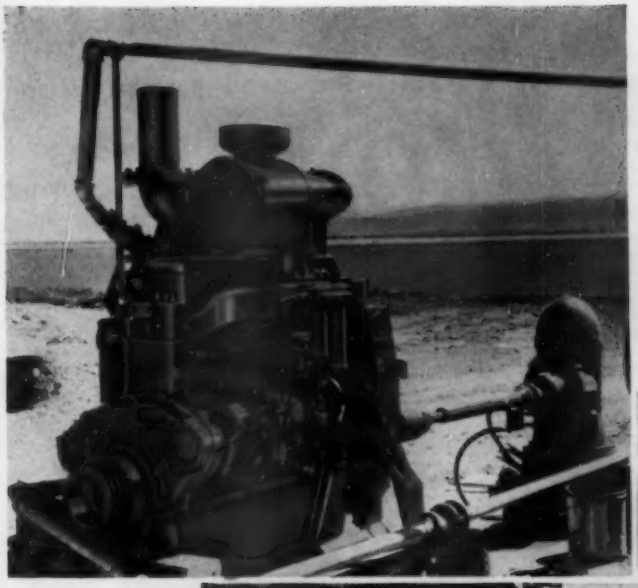

con motores Allis-Chalmers

AGUA EN ABUNDANCIA

donde y cuando se la necesite

Los motores Allis-Chalmers pueden obtenerse en una gran variedad de tamaños con capacidades hasta de 516 cf, y en modelos diseñados para funcionar económicamente con combustible diesel.

Su perfeccionamiento técnico es garantía de funcionamiento y economía insuperables. Por ejemplo, las especificaciones del motor Modelo 21000 (de 295 cf), que se ve en la ilustración, muestran que dicho motor consume de 8½ a 27 por ciento menos combustible que otros motores diesel de potencia similar.

Tales economías durante toda una temporada de uso ascienden a una suma considerable.

Los motores Allis-Chalmers funcionan a velocidades relativamente bajas, con el resultado de que las piezas del motor se desgastan menos y el motor dura más. Los motores pueden funcionar continuamente día y noche, durante toda la estación de riego.

Además de estos motores diesel, hay disponibles otros motores Allis-Chalmers que consumen gasolina, kerosina, gas natural, butano, propano y otros combustibles. Hay asimismo una variedad de accesorios que permitirán satisfacer los requisitos de cualquier programa de riego.

Para obtener datos completos sobre motores para bombas de riego, comuníquese con el Distribuidor de motores Allis-Chalmers en su región, o escríbanos directamente.

ALLIS-CHALMERS INTERNATIONAL Departamento AZ1160 — Milwaukee 1, E.U.A.

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Para una Cosecha de Azucar Más Lucrativa usted necesita los tres

Carros de Caña Firestone-Electric Wheel

Usted ahorra tiempo y transporta más caña del campo al trapiche con Carros de Caña Firestone-Electric Wheel. Un surtido de cinco diferentes estilos y tamaños — 3 a 6 toneladas — le permite escoger el carro que más le convenga. Todos ellos estan construidos con fuertes bastidores de acero, ejes de acero al carbono y ruedas reforzadas equipadas con cojinetes cónicos y neumáticos Firestone para larga duración y fácil rodaje. Un tractor fácilmente puede remolcar un tren de estos carros. Gane más en cada cosecha con Carros de Caña Firestone-Electric Wheel.

ALL TRACTION CHAMPION

SPADE GRIP

Neumáticos de Tractor Firestone

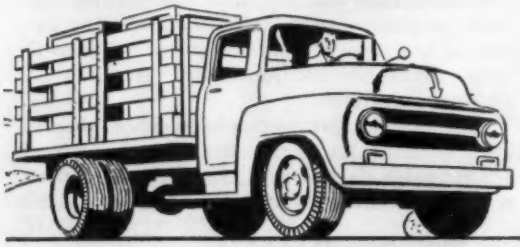
En cualquier campo, en cualquier condición de tierra, usted recibe plena fuerza de tracción en la barra con Neumáticos de Tractor Firestone. En campos mojados, el Firestone Spade Grip es incomparable en autolimpieza y tracción. En condiciones de tierra normales, el Firestone All Traction Champion le dará el mejor resultado. Las cuerdas Firestone S/F (Shock-Fortified) dan resistencia máxima a roturas del armazón. Las bandas de rodamiento Firestone Caucho-X*, con sus grandes barras curvadas y ahusadas, dan más tracción y duran más tiempo.

SUPER ALL TRACTION

H. D. TRANSPORT

Neumáticos de Camión Firestone

Ya sea que conduzca en el campo o en la carretera, hay un neumático de camión Firestone para usted. El Super All Traction está diseñado especialmente para campos y caminos de tierra — el Heavy Duty Transport para transportes por carretera. El cuerpo de cuerdas S/F (Shock-Fortified) y la banda de rodamiento Firestone Caucho-X* le dan mejor servicio y duración más larga que nunca.



Vea a su Distribuidor Firestone por carros y neumáticos Firestone para Cosechas de Azucar Más Lucrativas.

**Firestone Caucho-X, el caucho más duradero jamás usado en neumáticos Firestone.*

FIRESTONE INTERAMERICA COMPANY

Akron 17, Ohio U.S.A.

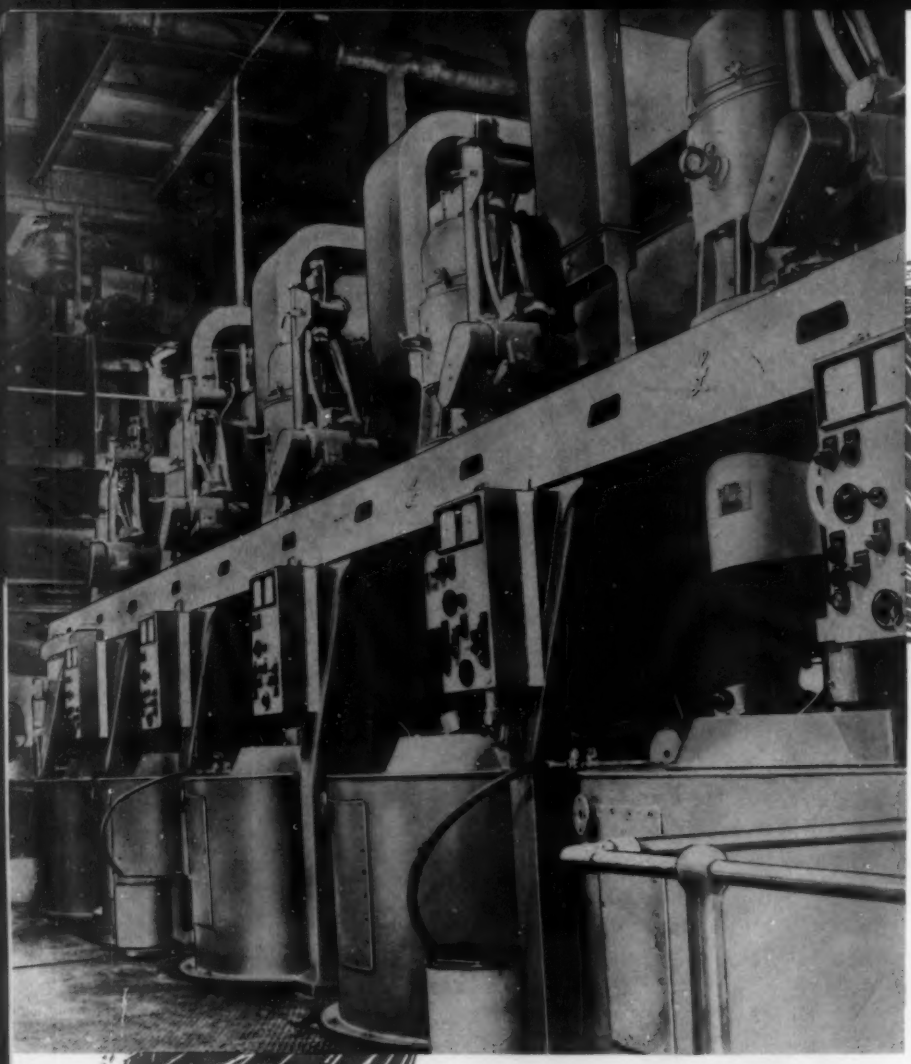
Clarificación uniforme al costo más bajo con Filtración Celite

De un mes a otro, cargamento por cargamento, año tras año, los auxiliares de filtración de diatomita Celite® aseguran alta calidad y resultados uniformes. Puesto que el Celite se extrae de un sólo depósito puro y es elaborado en la planta de diatomita más grande del mundo, no puede haber desviación en su comportamiento. Esta fuente única, cuidadosamente controlada, asegura un suministro continuo de un surtido completo de calidades standard y especiales.

El Celite elimina los coloides en suspensión y las bacterias termofílicas del azúcar de caña y remolacha a las velocidades de flujo más rápidas que se pueden lograr. Como resultado, se reduce grandemente la costosa obstrucción causada por el carbón animal o el carbono activado. Es más, la menor densidad de la diatomita Celite ofrece mayor cobertura de superficie . . . seis sacos hacen el mismo trabajo que siete sacos de otras diatomitas. Hoy en día, las distintas calidades de Celite incluyen la perlita Celite. Vea a un Ingeniero de Filtración de la J-M para obtener detalles completos o escriba a Johns-Manville, Box 14, N.Y. 16, N.Y. En el Canadá: Port Credit, Ontario.

Auxiliares de filtro de la División Celite, cuando se utilizan como tales, no se consideran aditivos alimenticios según los define la Ley FD&C, Enmendada, Sección 201 (s).

JOHNS-MANVILLE



Una batería 6 48"x30", 1,300 r/m. de centrífugas completamente automáticas con Transmisión Leonard en The Millaquin Sugar Co., Bundaberg, Australia.

En fábricas y refinerías de azúcar de remolacha y de caña siempre se observa la tendencia hacia la modificación del proceso de elaboración a fin de obtener cada vez mayor continuidad. Para llevar aún más lejos este principio, la ASEA-Landsverk presenta—

La Centrífuga Completamente Automática

con Transmisión Leonard

Esta centrífuga presenta las mismas ventajas que la máquina de marcha continua y velocidad constante, en lo que se refiere al bajo consumo de energía y al bajo costo de conservación.

SUS PRINCIPALES CARACTÉRISTICAS SON:

Diseño Aerodinámico

Velocidades Variables, Máxima y de Carga

Frenaje Regenerativo Completamente Eléctrico

No Ocurren Picos de Carga

Mecanismo de Carga Neumáticamente Accionado

Descargador Accionado por Motor

Sincronización Automática Centralizada

Propia para Azúcar de Todas Clases

Contamos con representantes y facilidades de servicio en todos los países productores de azúcar.

Para mayor información dirríjanse a la oficina de la ASEA mas cercana o directamente a:

ASEA

Västerås, Suecia

Estas dos conversiones son para un tándem de 15 mazas de 29" x 54" como parte de un programa de modernización para aumentar la capacidad y la eficiencia. Este programa incluye la instalación de turbinas [illegible] modernización de los transmisiones, lo que ha [illegible] de molienda.

OTROS DOS MOLINOS MODERNIZADOS POR FULTON en el INGENIO VALDEZ, ECUADOR

Si sus molinos son viejos y no trabajan bien, ¡es hora de modernizar! Las conversiones con armazones Fulton le darán el beneficio de un nuevo tándem moderno . . . a una fracción del costo. He aquí porqué:

1. Mejor trabajo de los molinos y mayor rendimiento.
2. Libre flotación de las mazas superiores.
3. El raspador superior asciende con la maza.
4. Gran variedad de ajustes para mayor duración de las mazas.
5. Tornabagazos más angostos que requieren menos potencia.
6. Tapas de arietes hidráulicos de diseño mejorado.

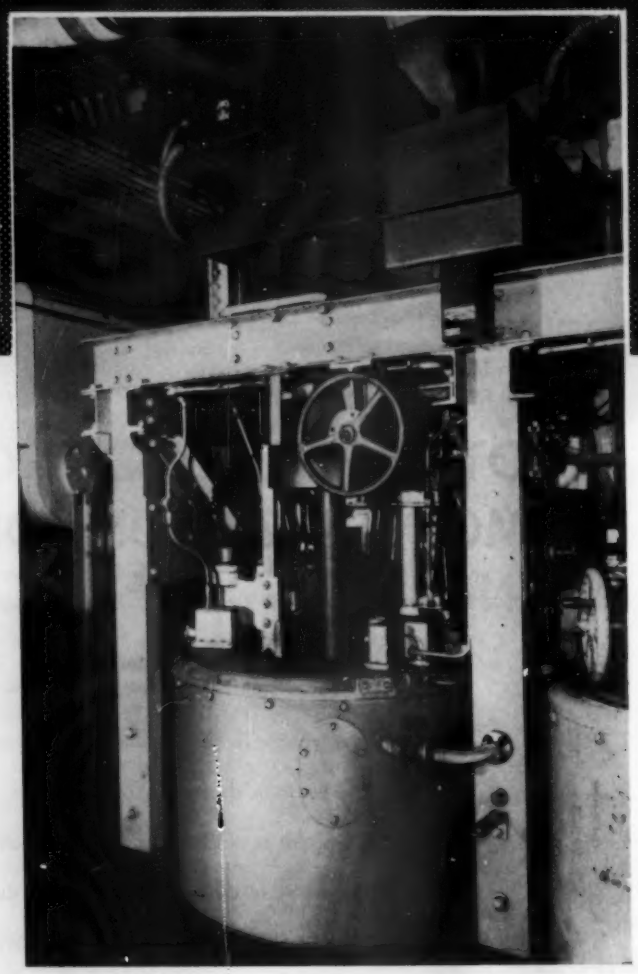
TANDEMS COMPLETOS — ENGRANAJES — PIEZAS

En la mayoría de casos se pueden retener las bancazas, chumaceras, bronces y tapas laterales y los pernos transversales existentes. En algunas conversiones también se pueden usar los tornabagazos existentes.

FULTON DESDE 1852

FULTON IRON WORKS COMPANY
St. Louis 10, Missouri, E.U.A.

CENTRÍFUGAS COMPLETAMENTE AUTOMÁTICAS



Nuestro último diseño de una Centrífuga Completamente Automática ofrece plena automatización en el campo de la centrifugación. No hay problemas de adiestramiento de personal; no es necesario dejar margen para los fallos humanos. Cada fase del ciclo puede ser pre-regulada según el tipo de azúcar a ser tratada.

POTT, CASSELS & WILLIAMSON LTD.

Miembro del Grupo Mirrlees Watson,
Motherwell, Lanarkshire, Escocia
Cables: Pott, Motherwell.

Cuando empezar a Poner Coto a las Pérdidas de Sacarosa

. . . y como el uso del Steri-Chlor 4X de Wyandotte aumenta el rendimiento de azúcar

El trabajo de control que comienza en el tanque de jugo mezclado, comienza demasiado tarde . . . porque al llegar a ese punto, una cantidad apreciable de sacarosa ya se ha perdido.

La causa: Los lodos de molino que se forman alrededor de las cuchillas Messchaert, en los filtros de jugo, encima del tanque pesador de jugo y en otras partes del equipo de molienda, contienen enzimas que hacen que la sacarosa se invierta para convertirse en glucosa con gran rapidez. Estas enzimas también están activas en los desechos agrios del bagazo. A menos que su acción sea detenida, las pérdidas por inversión pueden ser severas.

El STERI-CHLOR 4X de Wyandotte hace inactivas estas enzimas que causan la inversión de la sacarosa, y reduce su continua formación. Retarda el desarrollo de las levaduras y las bacterias, es efectivo contra los organismos que causan la formación de dextrana y reduce substancialmente las pérdidas de sacarosa.

El consiguiente aumento en el rendimiento del azúcar puede ser hasta de tres y media toneladas por cada mil toneladas de caña molida.

La higienización del tren de molinos con STERI-CHLOR 4X es decididamente una práctica provechosa. Este producto es de bajo costo . . . requiere sólo una pequeña inversión en equipo especial . . . y su uso es perfectamente seguro en todos sentidos. No corroe ni daña los metales, equipo de molino, las manos ni la ropa . . . es estable y no tóxico.

Tendríamos mucho gusto en suministrarle informes más específicos sobre el STERI-CHLOR 4X . . . y como puede ser aplicado provechosamente en sus operaciones. Los datos pueden ser obtenidos por medio del cupón que se reproduce más abajo. Llénelo y envíelo hoy mismo.

Wyandotte
REG. U. S. PAT. OFF.

CHEMICALS

División J. B. Ford

WYANDOTTE CHEMICALS CORPORATION
DEPARTAMENTO DE EXPORTACION 3230
WYANDOTTE, MICHIGAN, EE. UU.

Favor de enviar detalles de como el STERI-CHLOR 4X puede aumentar el rendimiento de azúcar.

Preferiría los datos en ( ) inglés ( ) español.

NOMBRE_____

CARGO_____

EMPRESA_____

DIRECCION_____

CIUDAD_____ ESTADO_____ PAIS_____

Nota: Acompañe detalles sobre el funcionamiento de su molino para obtener informes más específicos sobre lo que el STERI-CHLOR 4X puede hacer por usted.

Extractos de Publicaciones Azucareras

Publicados bajos los Auspicios de la
Sociedad Internacional de Tecnólogos Azucareros de Caña
por Arreglo Especial con
SUGAR y AZUCAR—Dr. O. W. Willcox, Redactor Técnico

Tecnología

Extracción de Azúcar Por Medio de una Prensa de Tornillo

S. C. SMART and ASSOCIATES, *International Sugar Journal*, 1959, pp. 205-206

Una investigación fue llevada a cabo en una fábrica azucarera de Sudáfrica sobre el uso de una máquina para extraer el agua del bagazo de caña, oprimiéndolo en una prensa de tornillo reductor que gira dentro de una caja cilíndrica, al cual tiene perforaciones para el escape del líquido. Dentro de la prensa se mantiene durante algunos segundos una presión alta que va en aumento, permitiendo así que sea expulsado el jugo diluído. Durante los ensayos el contenido de humedad del bagazo al salir del último de un tándem era de un 51%, el cual fue reducido por la prensa a aproximadamente un 43%; el contenido de azúcar del bagazo, que era de un 2%, fue reducido a aproximadamente un 1.6%. El promedio de pureza del jugo era de alrededor de 78. Añadiendo agua al bagazo antes de introducirlo en la prensa de tornillo, fue posible disminuir aun más el azúcar en el bagazo, sin aumentar el contenido de humedad en el producto final. En general, el aumento de extracción de la molienda fue de 1.5 a 2.0%.

A base de este experimento, es concebible que, de ser mejorada aun más la prensa de tornillo, ésta podría reemplazar al tren de molinos convencional. En un tándem compuesto de tales prensas, el agua de maceración empaparía completamente el bagazo al pasar éste a la próxima unidad. El resultado sería una reducción en el número de unidades necesarias para una extracción dada en una fábrica que elabora de 1,000 a 2,500 toneladas de caña por día. Asimismo significaría una economía considerable de fuerza motriz e inversión de capital. Se calcula que una fábrica con capacidad de 2,500 toneladas y con una eficiencia de molienda actual de siquiera un 95% podría aumentar su producción de azúcar en 500 toneladas durante una molienda de 100 días.

■

La Influencia del Grado de Preparación en el Trabajo del Molino No. 1

Sugar Research Institute, Mackay Technical Report No. 49 (1956)

Las pruebas descritas tienen por objeto determinar si la caña desmenuzada ofrece ventajas sobre al caña cortada en cuanto a la manera en que afecta el trabajo del molino No. 1. Se llegó a la conclusión de que—(1) la caña desmenuzada rendirá un 2% más de extracción de pol. debido a la reducción en las pérdidas por reabsorción en el rodillo de entrega. (2) No hubo indicio alguno de un grado óptimo de preparación. (3) No se halló evidencia alguna que indicara cualquier influencia sobre el coeficiente de molienda, pero tal parecería que, con una ligera precompresión de la caña, podría obtenerse una pequena ganancia, debido a la mayor densidad de la misma. (4) Hay una reducción apreciable en la potencia de molino que se requiere para una extracción dada utilizando caña desmenuzada.

■

Nuevo Proceso de Clarificación de Jugo para Ser Empleado en Malas Condiciones de Incrustación

B. A. BOURNE y P. S. FRANCIS, *Sugar Journal*, Vol. 22, No. 29, pp. 17-20 (1960)

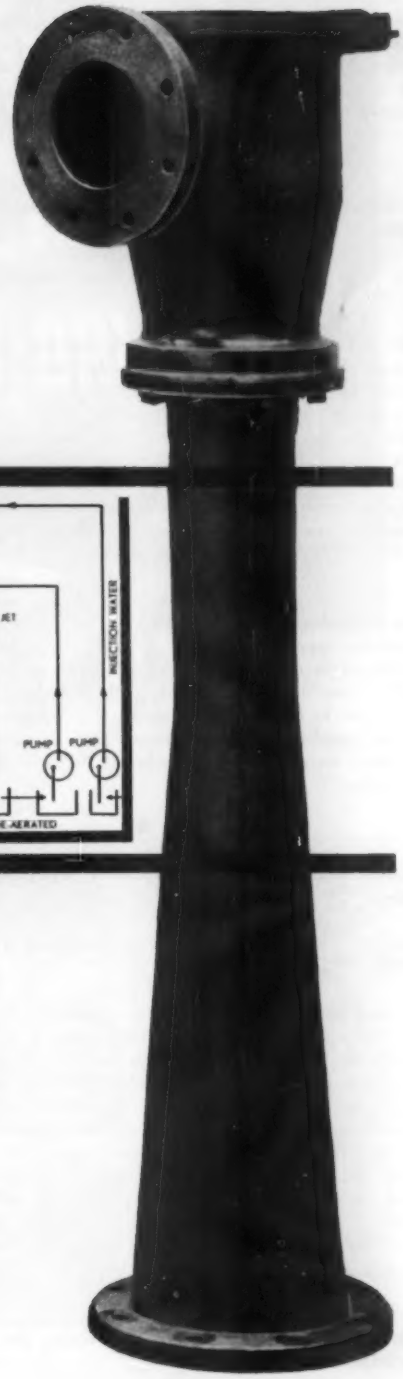
El jugo de la caña de azúcar cultivada en los Everglades de la Florida se caracteriza por un alto contenido de sales de cal, que asciende a aproximadamente 360 p.p.m. de Ca. Cuando este jugo es defecado por el proceso corriente de alcalización, el entubado del evaporador queda recubierto por una espesa capa de carbonato de calcio, que tiene que ser removida con ácido clorhídrico, un ácido que corroe profundamente las superficies metálicas.

Tras numerosos intentos de remediar esta situación, se decidió buscar un nuevo sistema de clarificación de jugo que eliminaría por completo el uso de la cal. El mejor método hallado hasta la fecha, desde el punto de vista del costo y de su eficiencia en una amplia diversidad de jugos de distintas variedades de caña, se hizo posible mediante el uso de P_2O_5 en la forma de superfosfato triple a una velocidad de 150 a 200 p.p.m. en el frío, seguido del ajuste del pH a 7.8 con amoníaco, y luego calentándolo hasta el punto de ebullición con la adición de un agente de sedimentación (Separan AP. 30, producido por la Dow Chemical Co.,) en el momento en que el jugo calentado entra en el clarificador. El Separan se utiliza a la velocidad de 1.5 p.p.m.

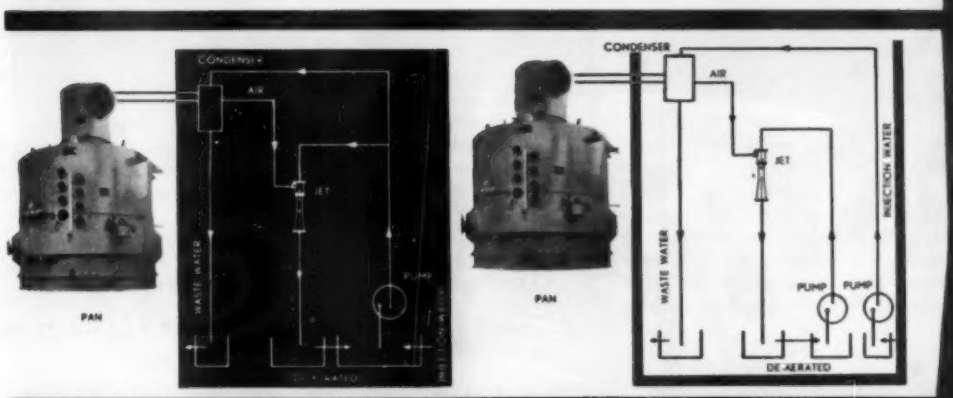
La característica más interesante del método del superfosfato triple-amoníaco-Separan es que el contenido de calcio en los jugos clarificados que entran en los evaporadores será reducido en algo así como una tercera parte, o sea, aun menos que la reducción que efectuaba el mismo clarificador de jugo mediante el viejo sistema convencional con ácido fosfórico y cal. Es natural, por lo tanto, esperar una reducción proporcional de las incrustaciones en el evaporador. Otra ventaja estriba en que los jugos clarificados son muchos más claros en color. La magma de azúcar es de menor viscosidad, lo que facilita la purgación de los cristales de azúcar en las centrífugas. El azúcar producido es también más claro de color. Hay indicios de que los rendimientos de azúcar son algo más altos, o sea alrededor de un siete por ciento mayores. La cantidad de proteína cruda en las mieles finales es aumentada en aproximadamente un 47%, por lo que resultan muy mejoradas como alimento suplementario para los rumiantes. Mientras el uso del Separan AP 30 mejora grandemente la clarificación y la velocidad de sedimentación, las pruebas no muestran que haya habido reducción adicional en el contenido de calcio.

En esta edad del cohete...

¿por qué no seguir la marcha?



DISPOSICION ESQUEMATICA



Provea sus Tachos Stork-Werkspoor al Vacío y sus Evaporadores Stork-Werkspoor con el Sistema Stork-Werkspoor de **Remoción de Aire a Chorro de Agua**

Sencillo y Barato

No tiene piezas vivas. No necesita agua adicional. Un solo orificio . . . no tiene múltiples inyectores pequeños que se atasquen.

Para maquinaria azucarera en general, diríjase a Gebr. Stork & Co. N. V., Hengelo, Holanda.

STORK V·M·F **WERKSPOOR**
HENGELO AMSTERDAM

Los autores indican que el uso del agua de amoníaco en lugar de la leche de cal para ajustar el pH del jugo crudo de caña no había sido observado anteriormente en la tecnología azucarera, pero es justificado por varias razones: no destruye la sacarosa en los niveles y temperaturas empleadas en este sistema, y de por sí no forma sales que se incrustan durante el proceso de evaporación.

■

El Consumo de Vapor al Hacer el Derretido con Agua o Jugo Claro

CHS. G. M. PERK, *South African Sugar Journal*, Vol. 43, No. 7, pp. 617, 619, 621 (1959)

El S.A. Sugar Milling Research Institute (Instituto Sudafricano de Estudios Sobre Molienda de Azúcar) plantea otra vez la cuestión de si es más económico derretir las masas cocidas B y C con jugo claro que con agua. Se supone que, en cualquiera de los dos casos, el derretido tiene una densidad de 72 Brix, y que la sala de tachos está equipado con un efecto cuádruple normal que concentra de 15° a 60° Brix. Los cálculos demuestran que los requerimientos para llevar a cabo el derretido correspondiente a 100 toneladas de caña y evaporarlo de 15° a 22° Brix son los siguientes:

	Agua	*Jugo*
Toneladas vapor por derretido	0.633	0.068
Toneladas vapor por cuádruple	16.317	16.184
Toneladas vapor por melado	0.985	0.977

La diferencia es de sólo 0.094 toneladas de vapor de y en los 212° F. por 100 toneladas de caña molida. La economía de vapor, por lo tanto, es muy pequeña y no compensa la desventaja del empleo de jugo clarificado para propósitos de derretido. Se ofrece un diseño de un tacho de derretir apropiado para la operación.

■

Cristalización de Grado Bajo y Recuperación de Azúcar

Sugar Research Institute, *Mackay Technical Report No. 58* (1958)

Puesto que la viscosidad de las mieles es el factor principal que limita el proceso de cristalización en la fábrica de azúcar, la meta de pureza puede definirse como la verdadera pureza de las mieles finales cuando la viscosidad alcanza el valor seleccionado de 1,000 poises. Esto se relaciona estrechamente con la proporción R.S./Ceniza de las mieles. También se estudió el valor del enfriamiento de las masas cocidas B: una merma de pureza de cuatro unidades se registró cuando la masa cocida fue mantenida en la temperatura final del tacho durante dos horas. El enfriamiento causó otra merma, pero esto podría afectar la pureza de los azúcares B en las centrífugas.

■

Polarímetros Automáticos con Rayo de Luz Electrificado

A. EMMERICH, *Zucker*, Vol. 13, No. 6, pp. 148-153 (1960)

El autor describe los nuevos polarímetros fabricados por las empresas Carl Zeiss de Oberkochen; Hilger & Watts, de Londres, y la ETELCO, también de Londres, y señala la importancia de la dispersión rotatoria de los no-azucares ópticamente activos con respecto a la determinación de la polarización de los productos comerciales del azúcar, cuando se usa luz de distintas longitudes de onda.

Todos estos instrumentos dependen de la longitud de onda del espectro verde-amarillo del mercurio y, por lo tanto, no están de acuerdo con la definición generalmente reconocida de la escala internacional de azúcar fijada por la ICUMSA. El uso de luz de diferente longitud de onda plantea la cuestión de si, y en que medida, la dispersión rotatoria de los no-azucares ópticamente activos afectará la evaluación de varios productos del azúcar.

El disco estandard de cuarzo, que es la característica básica de la escala de azúcar internacional, no puede ser comparado directamente con el aparato de rayo de luz electrificado, porque su valor en azúcar cambia con la longitud de onda de la fuente de luz empleada.

La escala internacional de azúcar fue creada después de largas y difíciles discusiones, las cuales condujeron finalmente a su adopción en todo el mundo para medir la polarización. Todos los aparatos con compensación de cuarzo tienen la misma escala; trabajan con los mismos largos de tubos de polarización y los resultados son directamente comparables. Y ahora esta uniformidad, tan duramente lograda, está amenazada por la introducción de nuevos instrumentos de rayo de luz electrificado. La tarea más importante de la ICUMSA en el próximo futuro será desarrollar nuevos principios que capacitarán a la industria óptica para proporcionar a los instrumentos de rayo de luz electrificado una escala uniforme, en lugar de las diferentes escalas que usan ahora. Debe reconocerse que el antiguo tipo de polarímetro es anticuado porque sus lecturas tienen una base más bien subjetiva que objetiva como generalmente es el caso ahora con los modernos fotómetros y colorímetros, y es deseable que los mismos polarímetros lleguen a ser objetivos.

■

Clarificación de Jugo por el "Proceso Alrubar"

ALEJANDRO RUBIO BARO, *Oficial Boletín A.T.A.C.*, Vol. 27, No. 8, pp. 535-537 (1956)

Se ha hecho notar que los sistemas existentes de purificación del jugo del azúcar de caña, que emplean la cal y el calor, tienen el gran inconveniente de que no producen azúcar blanco tal como existe naturalmente en los tallos de la caña. La dificultad estriba en que, cuando se hierve el jugo crudo después de añadir la cal, una parte de los coloides y otras impurezas en el jugo se disuelven, y dichas impurezas se mezclan con el azúcar, del cual se obtiene con dificultad el azúcar blanco; además de esto, hay gran pérdida de azúcar por inversión.

El nuevo proceso, que evita estas dificultades, consiste en coagular las impurezas en el frío; es decir, a la temperatura corriente después que el jugo ha pasado por el molino. Después es pasado por un cedazo para quitar el bagacillo. Entonces se añade cierta cantidad de ácido fosfórico para bajar el pH a 3.5 y el jugo es inmediatamente alkalizado hasta alcanzar un pH de 7.3 a 7.5. La floculación de las impurezas ocurre instantáneamente. Seguidamente, se pueden separar las impurezas aglutinadas por medios mecánicos, preferiblemente por medio de una centrífuga con un cesto sólido de 48" por 26" a 1,200 r.p.m., lo que ha dado excelentes resultados.

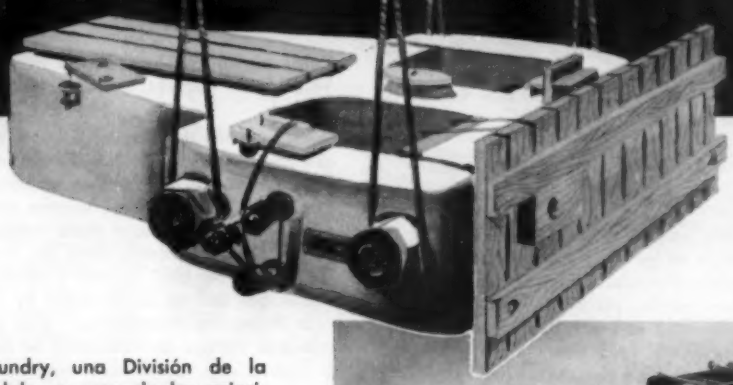
■

Dos Rodillos Versus Tres Rodillos

Sugar Research Institute, *Mackay Technical Report No. 50* (1958)

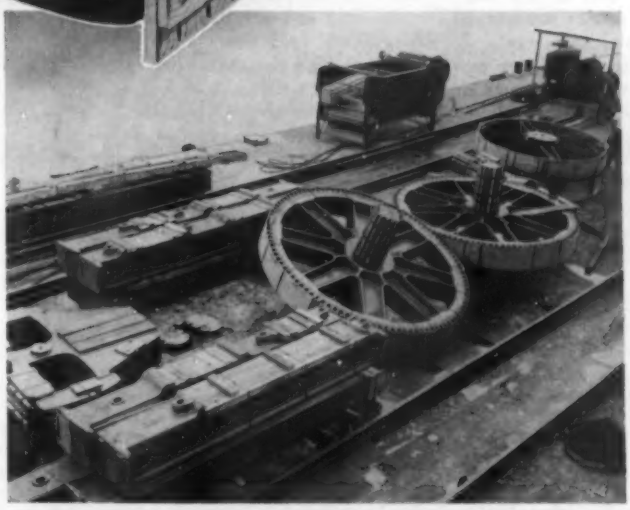
Cuando los molinos de dos y tres rodillos tienen aperturas de avance similares, iguales velocidades de los rodillos y sistemas de alimentación idénticos, las velocidades finales de trituración serán las mismas. Bajo estas condiciones, la extracción

from: SERVICE FOUNDRY
to: ST. CROIX, VIRGIN ISLANDS
via: THE PORT OF NEW ORLEANS



La Service Foundry, una División de la empresa Avondale, es una de las principales firmas manufactureras de Maquinaria Azucarera en los Estados Unidos, dando servicio doméstico y extranjero.

El molino de caña de azúcar ilustrado en la fotografía, integrado por las bancazas para el primer y segundo molinos; el tren de engrane y sus otros componentes; conductor intermedio y vírgenes del molino, constituyen un ejemplo excelente del diseño, ingeniería y habilidad de mano de obra de la Service Foundry. Este equipo fué embarcado por el puerto de Nueva Orleans para ser instalado por la Service Foundry en Christiansted, St. Croix, Islas Vírgenes.



SERVICE FOUNDRY

416 ERATO ST. • JAckson 2-3836 • NEW ORLEANS 13, U. S. A.

A DIVISION OF **AVONDALE SHIPYARDS, INC.**

FORMERLY AVONDALE MARINE WAYS, INC.

del molino de dos rodillos tiene siempre que ser menor que la del molino de tres rodillos para cualquier relación de trabajo superior a la unidad. La extracción en el molino de dos rodillos sólo puede ser aumentada mediante la reducción de la apertura de avance, lo que reduce la velocidad final de trituración. Para contrarrestar esto, la velocidad de los rodillos puede ser aumentada apreciablemente; y aunque el molino de dos rodillos podría posiblemente entonces igualar el funcionamiento de la unidad de tres rodillos, habrá un aumento en los requerimientos de fuerza motriz. Esto ha sido confirmado comparando el trabajo de una trituradora comercial de dos rodillos utilizando caña desmenuzada en Pleystowe. En vista de todo esto, no se puede aconsejar el uso de molinos de dos rodillos de diámetros normales; pero si se pudiera aumentar el diámetro del rodillo, existiría la posibilidad de diseñar una unidad que diera iguales resultados que una unidad normal de tres rodillos. Pero como estos rodillos tendrían que ser de 45" en diámetro, pesarían casi dos veces lo que pesan los rodillos normales, y las paredes laterales de los molinos tendrían que ser tanto más grandes y pesadas, y es dudoso que los costos iniciales serían muy diferentes de los de un molino de tres rodillos.

■

Agronomía

La Enfermedad que Impide el Crecimiento de los Retoños en Java y los Efectos del Tratamiento Largo con Agua Caliente sobre la Germinación

HAN LIOE HONG, *Reporte de la Estacion Experimental Azucarera de Java*, 1960, No. 1

La enfermedad de los retoños se conoce en Java desde 1954; pero no abunda y en apariencia se presenta en forma relativamente leve. Pruebas comparativas realizadas en el campo por algo mas de dos años revelan que las pérdidas fluctúan entre tres a once porciento. La enfermedad se controla por medio del tratamiento largo con agua caliente (dos horas a 50 grados centígrados); pero este tratamiento generalmente da lugar a que las yemas laterales de los trozos de semilla tratados se reblandecen, resultando tan tiernas que se dañan fácilmente aun bajo las mas cuidadosas condiciones manuales, lo que da por resultado que se reduce el número de las que aguantan o se sostienen en el campo.

Se practicó una investigacion para saber como reaccionaban las yemas de distantas cañas de diferentes edades al tratamiento largo con agua caliente. Tales investigaciones permitieron llegar a la conclusion que para someterlas al tratamiento, las cañas POJ 3016 deben tener mas de ocho meses y las POJ 3067 no deben ser menores de siete meses. La práctica en Java es obtener tres trozos para semilla cortados de la parte arriba del tallo, conteniendo dos o tres yemas cada trozo. El trozo No. 2 de semilla (conteniendo las yemas numeros tres y cuatro) es el mas resistente al agua caliente.

■

Una Efectiva Unidad de Atomizacion entre Hileras o Surcos

J. BARNARD, *27a. Conferencia de la Sociedad de Tecnólogos Azucareros de Queensland (Australia)*, pp. 55-57 (1959)

En algunos casos un importuno crecimiento de hierba puede surgir en los campos de caña, unas 10 a 12 semanas despues de la ultima operacion de cultivo que ha podido practicarse entre los surcos. En este momento la caña tiene unos cinco pies y no ha desarrollado todavía suficientes hojas entrelazadas para excluír la luz solar y ahogar la hierba nueva. Esta se ha desarrollado apesar de haberse aplicado una atomizacion despues de la ultima operacion de cultivo. Para hacer frente a esta contingencia usualmente se envían obreros provistos de "knapsacks" (equipos portátiles al hombro) desde los cuales bombean hierbicidas; pero en tiempo de calor esta es una operacion lenta y agotadora. Tales dificultades originaron la invencion de un vehículo de ruedas bajas y 30 pulgadas de ancho, movido por un motor de siete HP. El vehículo incluye un asiento confortable para el operador, transporta un tanque de 15 galones de capacidad y una bomba para la solucion hierbicida, la cual se descarga por la parte trasera. Un dispositivo protege al operador contra las hojas y tallos de la caña. Se informa que esta máquina opera con el mayor éxito. Detalles de su construccion se dan en el reporte sobre estas pruebas.

■

Libros

El Manual Azucarero Gilmore de Puerto Rico y la República Dominicana (The Gilmore Puerto Rico-Dominican Republic Sugar Manual)

Publicado en 1958 por la Gilmore Publishing Co., New Orleans, Vol. 16:188 páginas, $10.00.

Esta edición del Manuel Gilmore abarca todas las fábricas de azúcar en Puerto Rico, la República Dominicana, Haití y las Islas Vírgenes. Así como en anteriores volúmenes, cada fábrica es descrita con detalles sobre sus propietarios, su personal técnico y administrativo, y datos sobre sus operaciones agrícolas. Ofrece tablas de datos sobre los resultados de las operaciones industriales en 1957 y 1958 y otros informes estadísticos. Hay mapas que indican la ubicación de las fábricas en Puerto Rico y la República Dominicana. Una guía para los compradores relaciona fuentes de suministro de maquinarias y otros servicios de interés para la industria azucarera.

■

Manual Azucarero Mexicano

SEGUNDA EDICIÓN, publicada por la Cía Editora del Manual Azucarero, S.A., Balderas 44, México, D.F., 360 páginas de texto de 8" x 11" con mapa, $6.00.

Recientemente ha venido a aumentar la lista de los anuarios azucareros regionales un atractivo volumen que contiene largas descripciones de cada uno de los 74 ingenios de México. En el mismo se relaciona el personal ejecutivo de cada ingenio y se ofrecen descripciones completas del equipo utilizado en los campos y en las fábricas. Un mapa en colores indica la distribución geográfica de los ingenios, las capacidades de los cuales varían entre menos de mil toneladas de azúcar al año hasta 166,000 toneladas. La producción total en 1958 fue de 1,122,943 toneladas.

Aparte de los datos sobre las fábricas, el libro ofrece información sobre las distintas organizaciones relacionadas con la industria: la Unión Nacional de Productores de Azúcar, la Asociación Nacional de Productores de Alcohol, el Instituto Financiero Nacional de la Industria Azucarera, el Sindicato Pro Mejora de la Caña de Azúcar, el Sindicato de Trabajadores de la Industria Azucarera y la Federación de Cosecheros de Caña. Este libro contiene un apéndice que consta de 20 páginas de tablas y gráficos de gran utilidad para los técnicos azucareros. Naturalmente, el libro está redactado en español.

El Central Okeelanta

(*Viene de la página* 59)

tral Okeelanta y comprende tres reductores convenientemente dispuestos que reducen la velocidad de la turbina de 5,500 rpm a 26 rpm.

Esta nueva forma de instalación permite tambien economías en el espacio horizontal y las turbinas de vapor pueden localizarse al mismo nivel, o ligeramente más altas al nivel de la plataforma de los molinos, y por consiguiente un solo operador puede atender todas las máquinas.

Creemos que el criterio expresado sobre las turbinas de simple etapa puede ser correcto para centrales azucareros que elaboran solo crudos y no tienen refinería, destilería u otro consumo adicional de vapor. Pero las fábricas azucareras con industrias anexas, o bombeando agua de irrigación a sus campos a expensas del balance de calor o incrementando sus sobrantes de bagazo para industrializarlo, tienen que considerar las economías de vapor derivadas de las turbinas de etapas múltiples. ***Editor.***

■

Zuckerwirtschaftliches Taschenbuch 1960

Este manual comercial azucarero publicado por Verlag, Dr. Albert Bartens; aunque de pequeño tamaño, ofrece una extensa informacion sobre las estadísticas azucareras mundiales. Incluye cifras sobre producción, consumo, importaciones y exportaciones clasificadas por países. Se describe detalladamente la industria azucarera de Alemania. (184 páginas, 4¼ x 6 pulgadas, F. A. Gunther & Sohn, A-G, Berlin SW 61)

■

Edward Elliott Administrara Bybrook

El Sr. Edward Elliott ha sido nombrado Administrador de la fábrica azucarera Bybrook, Bog Walk, Cathrine, Jamaica. Este central azucarero muele 1200 toneladas al día, es operado por United Estates Ltd. y de la propiedad de Harold V. Lindo. El Sr. Elliott procede de Barbados y recibió su educación profesional en el Colegio Técnico de Glasgow al mismo tiempo que obtenía experiencia con la Compañía Mirrlees Watson. A su regreso a Barbados trabajó 11 años con la firma D. M. Simpson, ingenieros consultores. Su labor con esta firma incluyó modernización de centrales azucareros, instalación de equipos para manejo de azúcares a granel, instalación de una planta generatriz de vapor y otros proyectos importantes relacionados con la industria azucarera. Mr. Elliott va acompañado por su esposa.

LOS REFINADORES DE AZUCAR PREFIEREN LOS AUXILIARES FILTRANTES

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Para limitaciones técnicas sobre la aplicación de los AUXILIARES FILTRANTES SIL FLO y muestras de los diversos grados disponibles, sírvase dirigir su consulta a nuestra oficina central. La Sil Flo ofrece servicio mundial a sus clientes a través de sus representantes en Cuba, México, Puerto Rico, América del Sur, el Reino Unido, Europa, Africa y el Lejano Oriente.

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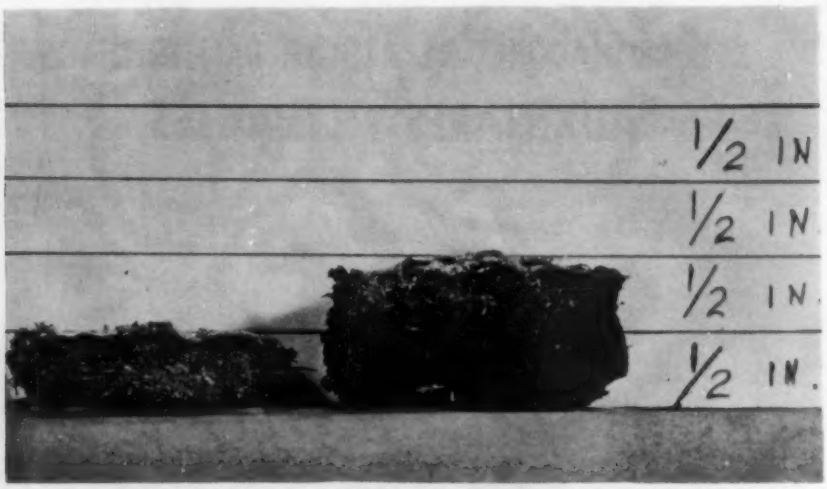

Nuevo Proceso de Filtración Tiene Exito en Puerto Rico

Un nuevo proceso de filtración ha completado con éxito recientemente una zafra ó periodo completo de molienda en el Central Plata Sugar Company, en San Sebastián, Puerto Rico. El proceso, inventado por la Dorr-Oliver Company y conocido como el Sistema de Filtración D-O Rapi-Floc, produce un filtrado claro por los filtros de cachaza ó lodo de caña existentes, sin necesidad de clarificación separada. El lodo de caña es floculado bajo rígido control de pH, de tal modo que se forman grandes flóculos que permiten el uso de una tela de filtro porosa. Un efectivo lavado de la tela, sin quitarla del filtro, evita que surja el problema de la obstrucción. El filtrado es tan claro como la corrida normal del clarificador. Como resultado de la experiencia en el Plata, el Sr. J. M. Sheehan, administrador del departamento de caña de azúcar de la Dorr-Oliver, informa que un programa de desarrollo del proceso ha sido iniciado para investigar su aplicación a lodos en otras regiones, con miras a poner finalmente el D-O Rapi Filtration System al alcance de la industria azucarera en todo el mundo.

Lo más nuevo en máquinas de transporte en los campos es la Albee Rolligon. Ha sido construída en California por una compañia que se ha venido especializando en vehículos militares para ser usados sobre arena, lodo y terreno no apropiado para el transporte sobre ruedas. Dos unidades fueron embarcadas a Hawaii y una a la República Dominicana para experimentación. La Stubenberg Co., en Honolulu, alargó el mecanismo de transmisión del triciclo de la unidad que se muestra arriba, hasta tener una base para ruedas de 105 pulgadas sobre la cual montó una carrocería adecuada para cargar plantones y replantar campos de caña. La máquina de dos toneladas tiene una capacidad de carga de 3,000 libras. La Oahu Sugar está probando esta máquina.

Personal Ejecutivo

Las solicitudes sobre personal ejecutivo para la industria azucarera han ido en aumento. El Servicio de Empleos de Sugar y Azucar tiene disponibles las siguientes posiciones:

Ingeniero-Jefe Mecánico
Jefe de Fabricación
Jefe de Laboratorio
Superintendente de Campos
Cuatro Operarios Especializados para el Proceso de Fabricación

Se han sugerido algunos profesionales para cubrir estas vacantes; sin embargo, el personal disponible idóneo no abunda.

A continuación relacionamos personal clasificado que solicita empleo:

Bio-Químico Analista
Ingeniero para Ventas y Servicio
Administrador General
Supervisor Técnico de Fábrica
Ingeniero-Jefe
Contador
Agrónomo
Superintendente de Fabricación
Director de Relaciones Laborales

El Servicio de Empleos de Sugar y Azucar se ha organizado para suministrar personal de nivel ejecutivo a las administraciones azucareras, por tanto carga sus honorarios a las compañías azucareras, nó a los empleados.

Las empresas azucareras interesadas en conseguir empleados calificados y el personal disponible que busca otra posicion queda invitado a escribir a: *Sugar y Azucar Personnel Service, 116 South King St., Honolulu 13, Hawaii.* Todas las solicitudes se tratan en forma estrictamente confidencial y los interesados pueden precisar las áreas azucareras a que quieran limitar su disponibilidad.

■

Grecia Construirá Tres Fábricas de Azucar de Remolacha

Los esfuerzos para establecer en Grecia una potente industria azucarera de remolacha han sido confirmados por el acuerdo entre el Gobierno Griego y el Banco Agrícola de Grecia, que se han unido para organizar una entidad comercial llamada "La Industria Azucarera Helénica." Segun los términos del acuerdo se instalarán tres fábricas azucareras, cada una con capacidad para 28,000 toneladas de azucar al año. Considerando que los cultivos se harán siguiendo el sistema de rotación de cosechas, el área total que se requerirá para las siembras de remolacha representará un total de 28,000 a 32,000 hectáreas de tierras laborables.

Los pasos iniciales para una de estas fábricas en la zona de Larisa fueron realizados este verano; y la nueva planta iniciará operaciones a finales de Agosto de 1961. Las otras dos fábricas en Thessaloniki y en Serrai se espera comiencen a funcionar dentro de los dos o tres próximos años.

Proceso a base de Disolventes para Fabricar Azucar

Se anuncia un nuevo proceso a base de disolventes para fabricar azucar de caña o de otras materias primas similares, eliminando la formacion de mieles y permitiendo el maximum de recuperación de sacarosa. Si la caña se muele es necesario usar dos disolventes: Alcohol Butílico o Acetato Etílico, en primera etapa, que purifica el jugo crudo dejandolo claro y casi sin color. Y la Acetona, en segunda etapa, para precipitar la sacarosa en el anterior jugo purificado. Como sub-productos resultan clorofila, cera de caña y un sirope comestible a base de azucares reductores.

El nuevo proceso se puede desarrollar con un solo disolvente, si la extraccion del jugo en lugar de hacerla por compresion en los molinos se corta la materia prima en tajadas y se extrae la sacarosa con una mezcla de acetona y agua. Se precipita la sacarosa contenida en éste extracto por nuevas adiciones de acetona fresca.

Se han realizado mas de 500 pruebas y se considera el asunto lleno de ventajas y valor potencial; aunque no perfeccionado todavía. Por tanto, se solicita la cooperacion de los Tecnólogos Azucareros e Ingenieros Químicos para que aporten su valiosa experiencia y conocimientos, dirigiendose a Kanchi Seshagiri Rau, Urban Bank Buildings, Kojjillipet, Masulipatam, India.

Con esta información correspondemos a la cooperacion solicitada por el autor y exponemos a nuestros lectores esta investigación digna de ser considerada.

■

Sobrante de Azucar en Swaziland

Como resultado de las dos anteriores excelentes cosechas y el establecimiento de dos nuevos centrales azucareros en Swaziland, la industria azucarera de Africa del Sur hace frente a un sobrante de 200,000 toneladas de azúcar para las cuales no han encontrado mercado. Segun se anuncia en la *Gaceta del Gobierno*, el Ministro de Agricultura y los productores han acordado restringir la cosecha de 1960-61 a un total de 940,000 toneladas reduciendo el 25% la cuota individual de los productores hasta que se exporte el sobrante citado. Mientras tanto no se otorgarán cuotas azucareras a nuevos empresarios en la industria.

■

Gran Fábrica de Papel para Periódicos, hecho de Bagazo, en la India

Una gran planta para la fabricación de papel para periódicos con una capacidad de 60,000 toneladas al año se instalará en Karad, estado de Maharashtra, en la India. Este lugar queda aproximadamente a 220 millas de Bombay. Se estima el costo de la planta en 20 millones de dólares. El proceso funcionará bajo las patentes desarrolladas por la industria azucarera de Hawaii y la Crown Zellerbach Corporation. Estas dos organizaciones, actuando conjuntamente y a través de la Hawaiian Development Corporation, han llegado a un acuerdo con la firma Sahu Jain Ltd. de Calcutta para suministrar asistencia técnica y los derechos de patentes. Sahu Jain Ltd. es la agencia administradora de uno de los mas grandes grupos industriales de la India, incluyendo empresas dedicadas a la fabricación de papel, azúcar, cemento, productos químicos pesados y fertilizantes nitrogenados. La organización Rohtas Industries Ltd., miembro del grupo industrial Sahu Jain, construirá y operará la nueva fábrica de papel.

Donald Luke Presidente de la Compañia Suchar

Donald K. Luke Sr. ha sido electo Presidente de la Suchar Sales Corporation, y de su compañía afiliada la Fas-Flo Filter Corporation. Mr. Luke era Vice-Presidente de ambas empresas, y ahora sustituye a J. W. Stafford, que se retira. A. R. Dominguez asciende a Vice-Presidente de Suchar y de Fas-Flo. La Suchar Sales Corporation es una bien conocida firma internacional azucarera que suministra un tipo especial de carbón activado; y su Compania afiliada construye un filtro usado ampliamente por la industria azucarera.

Nueva Válvula de Compuerta que Reduce los Costos de Reemplazo

Fabricada con Cuñas Sólidas para Resistir la Abrasión . . . Fabricada con Bronce para Resistir la Corrosión

Las nuevas válvulas de compuerta R-P&C están fabricadas de acuerdo con las más altas normas de ingeniería para resolver los problemas especiales de válvulas en la industria azucarera. Estas válvulas tienen cuñas sólidas y paredes extra-gruesas para hacerlas excepcionalmente fuertes y extraordinariamente resistentes a la acción abrasiva de los flúidos. El bronce empleado en las válvulas R-P&C es una aleación de metales de alta calidad, extremadamente resistente a los efectos corrosivos de los ácidos del azúcar en las tuberías.

La durabilidad y resistencia a la corrosión de estas válvulas pueden evitar interrupciones en la producción, y reducen los costos de manutención y reemplazo. Visite a su distribuidor hoy mismo y cerciórese cómo las válvulas de compuerta R-P&C en bronce pueden ahorrarle dinero.

R-P&C abarca un surtido completo de válvulas de compuerta, de globo, angulares y de retención fabricadas en bronce, hierro fundido o forjado en una amplia variedad de tamaños y estilos . . . y para toda clase de presiones. Además R-P&C ofrece productos especiales como válvulas de compuerta Lubrotite, grifos con prensaestopas de asbesto, accesorios de acero fundido y válvulas de acero fundido de cierre sellado a presión. Escriba a la dirección de abajo para más informes. sz

AMERICAN CHAIN & CABLE
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Lynn U. Stambaugh firma los documentos de compra del tandem Farrel representando al Export-Import Bank. De pie, de izquierda a derecha, Abraham Cornejo Isasmendi, asesor de la firma compradora; Franklin R. Hoadley por la Farrel-Birmingham y el Dr. Enrique Patron Costas, presidente de Tabacal, observan la operacion.

Un Nuevo Tandem, Capaz de Moler 6,000 Toneladas Métricas de Caña, para la Argentina

La firma Ingenio y Refinería San Martin del Tabacal, S.A., instalará en su central azucarero de caña en la provincia de Oran, Argentina, un nuevo tandem de seis molinos movidos por turbinas de vapor, con la excepcional capacidad de 6,000 toneladas métricas de caña por día. La orden ha sido entregada a Farrel-Birmingham Company, de Ansonia, Connecticut. El tandem consiste de seis molinos con mazas de 38 x 84" movidas individualmente por turbinas de vapor con una fuerza máxima de 1,000 HP a 5,000 RPM. Los molinos se moverán a través de engranes Farrel de doble reducción a alta velocidad y en unidades de engranajes completamente encerradas. Se usarán embragues de aire en lugar de los acoplamientos flexibles convencionales. El Export-Import Bank de Washington, D. C., hará el financiamiento a largo plazo, con participacion de Farrel. La instalación de este tandem es parte del programa de modernización de Tabacal.

■

Booker Brothers Compra la Innswood en Jamaica

Un suceso de extraordinaria importancia para la industria azucarera en Jamaica ocurrió recientemente cuando se anunció que la firma Booker Bros. McConnell & Co. Ltd. había comprado un interés mayoritario en la Innswood Estate Ltd. en Jamaica. Se calcula la producción de azúcar de la Innswood de esta zafra en 18,000 toneladas. Esta Compañía ha estado siendo administrada por un grupo de directores desde el fallecimiento de su anterior dueño, el Sr. Edwin Charley.

El Sr. Horacio Campbell continuará como administrador de la Estate y ha sido también designado como Director de la nueva sociedad Booker-Innswood.

La Booker Bros. está ya representada en Jamaica como propietarios del Tía María, pero ésta es su primera participación en la industria azucarera de Jamaica. Todos los miembros de la industria azucarera de la isla consideran que la entrada de la Booker en la mísma, sólo puede redundar en ventajas para la industria. Este será el medio de poner a la disposición de la industria azucarera de Jamaica la amplia y variada experiencia que ha acumulado esta compañía en el cultivo y recolección de la caña en la Guayana Británica, donde la Booker Bros. es responsable de la producción de más de 250,000 toneladas de azúcar al año.

Es interesante notar que la Booker Bros. McConnell & Co. Ltd. están en este momento llevando a cabo una investigación en sociedad con el gobierno de Nigeria para estudiar las posibilidades de desarrollar una industria azucarera en ese país.

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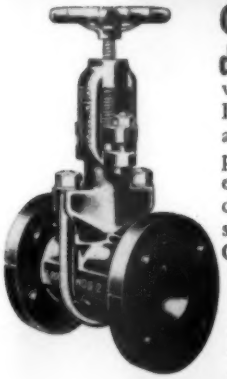

Como eliminar la costumbre de "Válvulas de Alto Precio" en el manejo de substancias corrosivas En otro tiempo y para servicios corrosivos se requerían válvulas de alto precio, construídas enteramente de Acero Inoxidable o de Metal Monel. La firma Lunkenheimer ha perfeccionado de manera exclusiva el Metal "Causul" para suministrar una aleación de alta capacidad a *bajo costo* . . . con resistencia balanceada a la corrosión producida por muchas soluciones cáusticas, ácidas y alcalinas. El resultado ha sido una rebaja substancial en el costo de válvulas para gran numero de aplicaciones que anteriormente exigían aleaciones de alto costo. Solicite Vd. de su Distribuidor Lunkenheimer que le ayude a revisar los problemas con substancias corrosivas en *su* planta. O escriba Vd. a Lunkenheimer Company, CINCINNATI 14, Ohio. **No se puede encontrar el costo de una válvula por una lista de precios.**

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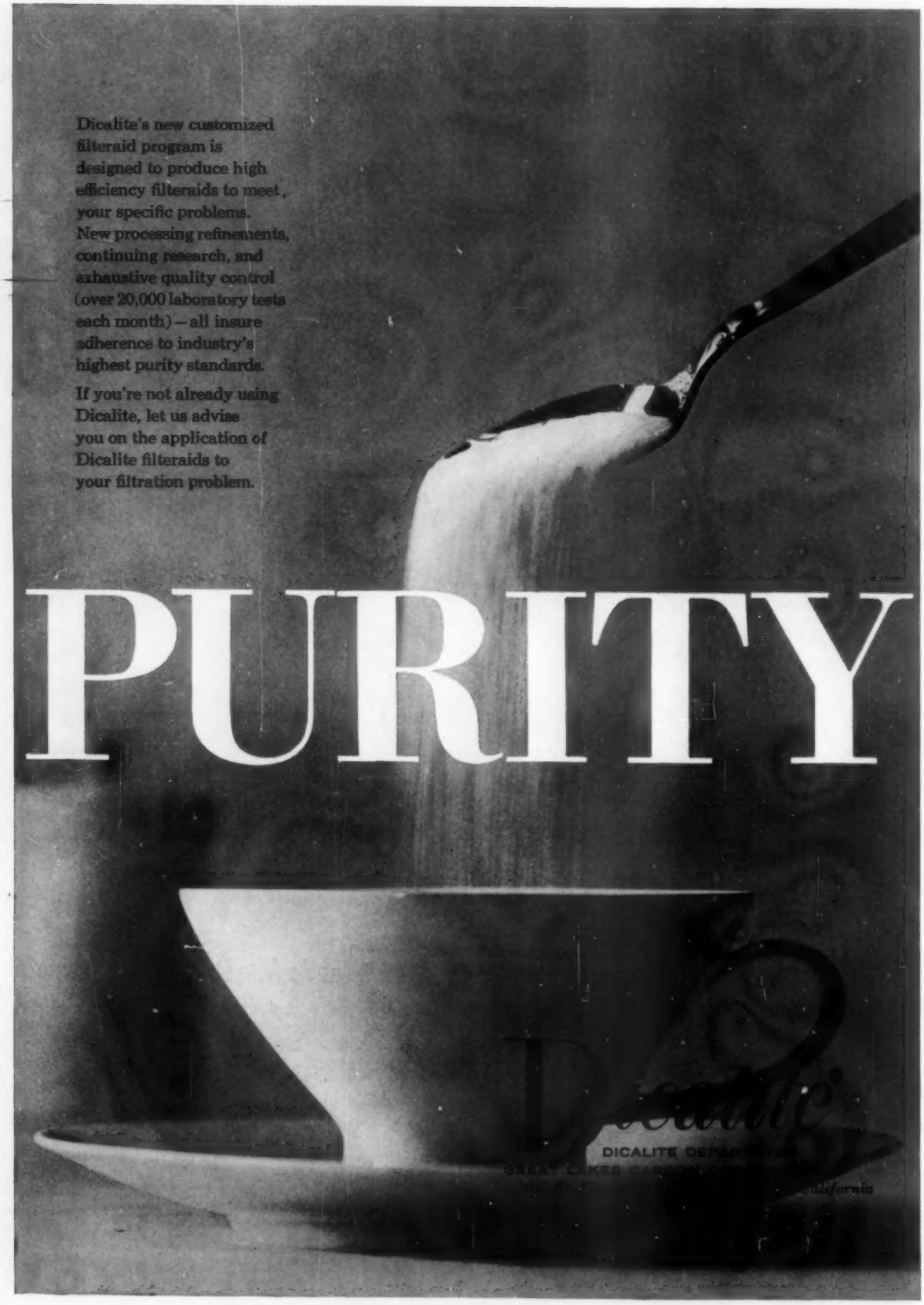
UN *Gran* NOMBRE EN VÁLVULAS

L-260-13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